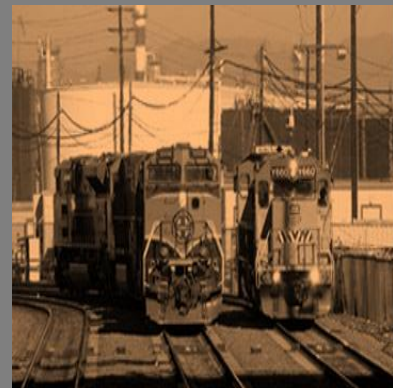


## District 3 Goods Movement Study

### Task 2: Literature Review

November 22, 2013



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# TASK 2: LITERATURE REVIEW

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This document represents the findings of the Task 2 literature review. The purpose of the literature review is to identify data sources, tools, and “best practice” methodologies that District 3 can use to develop this study, but that can be applied to future studies and other stakeholder efforts undertaken in the district. This knowledge can then be applied to better prioritize projects to improve the efficiency and effectiveness of the freight network in the District.

This effort will also support on-going federal and state efforts to address freight needs in the state. For example, the federal funding and authorization *Moving Ahead for Progress in the 21st Century Act* (MAP-21) passed in 2012 established freight movement and economic vitality as one of seven national goals for the Federal-aid highway program to improve the national freight network, strengthen the ability of rural communities to access national and international trade markets, and support regional economic development.

Importantly for funding goods movement projects, MAP-21 authorizes a federal share of up to 95% for Interstate System projects or up to 90% for projects on the other routes if these projects make a demonstrable improvement in the efficiency of freight movement and is identified in a State freight plan or a State Transportation Plan. Eligible projects for this increased share include:

- Construction, reconstruction, rehabilitation, and operational improvements directly relating to improving freight movement;
- Intelligent transportation systems and other technology to improve the flow of freight;
- Efforts to reduce the environmental impacts of freight movement on the primary freight network;
- Railway-highway grade separation;
- Geometric improvements to interchanges and ramps;
- Truck-only lanes;
- Climbing and runaway truck lanes;
- Truck parking facilities eligible for funding under Jason’s Law provisions
- Real-time traffic, truck parking, roadway condition, and multimodal transportation information systems;
- Improvements to freight intermodal connectors; and
- Improvements to truck bottlenecks.

This literature review will advance this new era in freight planning by identifying existing goods movement data sources and models that can be used for goods movement analysis in the district. The study team also reviewed completed and on-going plans that potentially are relevant to this District 3 Goods Movement Study. Finally, the review also assesses methodologies used in other regions to identify and prioritize goods movement projects in conjunction with regional partners.

The document contains the following sections:

- Data Sources
- Goods Movement Models
- Other Existing and On-Going Studies and Planning Efforts
- Project Identification and Prioritization Methodologies
- Findings and Conclusions.

## Data Sources

This section lists and summarizes a range of major data sources that can be used to evaluate existing and future conditions as well as to help in the identification of needs for goods movement in District 3. It also provides recommendations for datasets that can be used by the district for the current Goods Movement Study as well as in the future for freight planning efforts.

In general, recommended data sources should be easily obtainable by the district free of charge or for a relatively low cost. Moreover, they should be readily usable and understood by planners and engineers using commercial off-the-shelf software and commonly accepted analysis techniques. Some data sources may require the analyst to use a database software package (e.g., Microsoft Access), or in the case of travel demand models, a specialist may have to run the tool. However, as a general rule the recommended data sources are accessible and fairly-straightforward in their application.

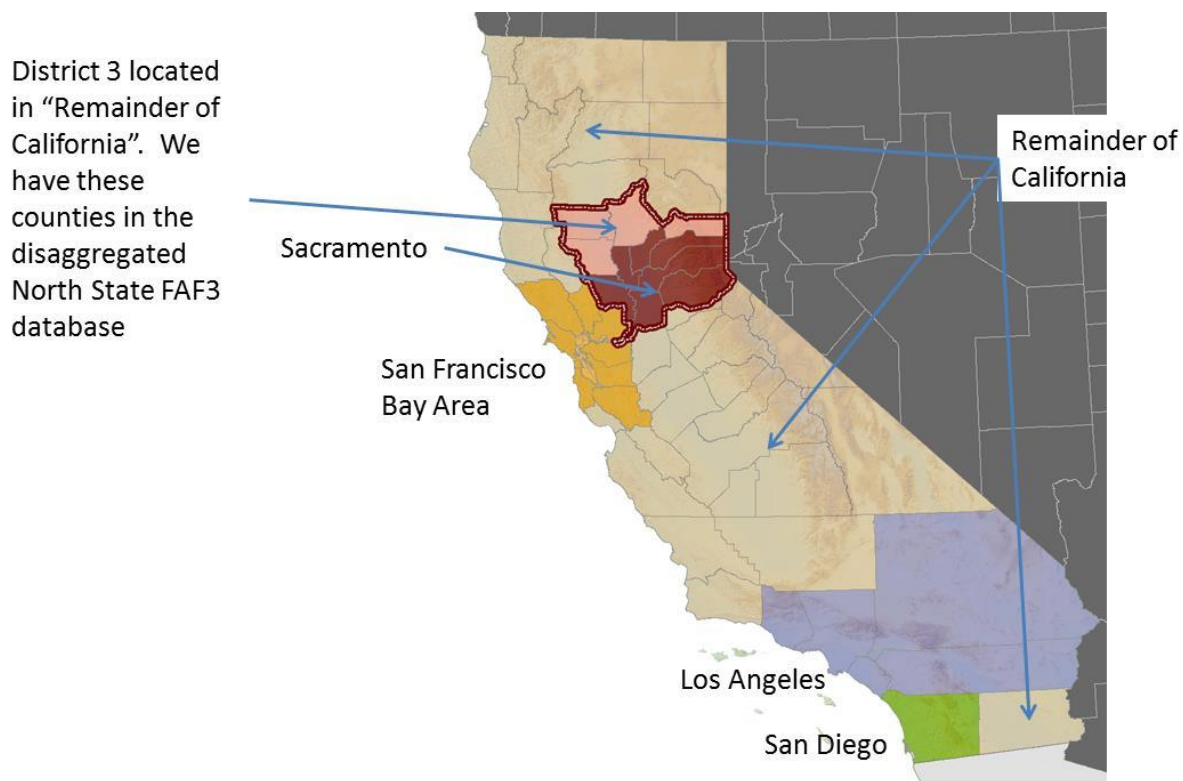
The first effort at statewide freight planning in California followed the 1991 Intermodal Surface Transportation Efficiency Act (ISTEA) with the development of the Caltrans Intermodal Transportation Management System (ITMS) in 1993. The ITMS relied on the proprietary IHS Global Insight Transearch database (formerly known as “Reebie Associates TRANSEARCH/Intermodal Freight Visual Database”), which was supplemented with the proprietary Port Import Export Reporting Service (PEIRS) (a subsidiary of JOC Group Inc.) as well as other data sources to capture agricultural and other freight movements not captured by these sources.

Since that time, several other comprehensive primary data sources have come online or been enhanced, but there is no unanimity on which ones are best to use for goods movement planning as there are strengths and weaknesses of all these sources. Some primary sources collect data for a limited number of modes (e.g., truck only or air only), commodities (e.g., do not include agricultural commodities or waste or scrap), or trade types (e.g., import/export only).

Levels of aggregation do not readily lend themselves to analysis of multicounty districts or districts that span multiple analysis zones. For example, the primary commodity data source that the study team is recommending for the District 3 Goods Movement Study, the Federal Highway Administration’s (FHWA’s) Freight Analysis Framework (FAF), places District 3 into two zones: the “Sacramento-Arden-Arcade-Truckee CA-NV Combined Statistical Area (CA Part)” and the “Remainder of California” (Shown in Exhibit 1). The remainder of California zone is expansive and covers most of rural California from Del Norte County on the Oregon border to Imperial County on the Mexican border.

In order to reconfigure the FAF to cover District 3, an extensive, reallocation of the FAF data would have to be performed. Fortunately, for this current goods movement effort, work was performed by an SMG team to develop a FAF database for the North State Super Region. For those counties (i.e., Butte, Colusa, Glenn, and Sierra) that are not in the “Sacramento” FAF zone, we can aggregate the data from those zones; combine it with the Sacramento zone to obtain a “District 3” aggregated zone.

### *Exhibit 1: Freight Analysis Framework (FAF) California Zones*



Several sources were used to identify data for this study. The recently completed draft of the *Develop a Reliable Planning-Level Methodology to Forecast Heavy Vehicle (Truck) Traffic Growth on State Highway Routes in the SACOG Region* (Kittleson Associates) for District 3 provided a set of data sources that potentially can be used for heavy duty truck forecasting. A Washington State Department of Transportation (WashDOT) report *Development of a Washington State Freight Data System* effort listed more than 50 data sources for domestic and international freight movement. The United States Department of Transportation (USDOT) Research and Innovative Technology Administration (RITA)/Bureau of Transportation Statistics (BTS) maintains a website with a list of freight data sources<sup>1</sup> as does the FHWA Offices of Planning and Freight Management & Operations<sup>2</sup>.

For this effort, the study team recommends using a set of existing, readily accessible data sources in order to be able to readily replicate results in the future. Exhibit 2 is a table that presents the recommended data sources, describes how the study team anticipates using each data source, and

<sup>1</sup> [http://www.rita.dot.gov/bts/sites/rita.dot.gov.bts/files/subject\\_areas/freight\\_transportation/index.html](http://www.rita.dot.gov/bts/sites/rita.dot.gov.bts/files/subject_areas/freight_transportation/index.html)

<sup>2</sup> [http://www.fhwa.dot.gov/planning/freight\\_planning/data.cfm](http://www.fhwa.dot.gov/planning/freight_planning/data.cfm)

discusses the pros and cons of each. Other data sources that can be applied to future studies can be found in Appendix A.

The recommended data and sources can be categorized into four general categories as listed below:

- Commodity Data
  - Freight Analysis Framework Version 3 (FAF3) - Federal Highway Administration (FHWA)
- Modal Volume and Traffic Data
  - California Vehicle Classification Counts – Caltrans Division of Traffic Operations
  - California Truck Volumes – Caltrans Division of Traffic Operations
  - EMFAC2011 Mobile Source Emission Inventory – California Air Resources Board (ARB)
  - California Performance Measurement System (PeMS) – Caltrans
- Economic Data
  - California County Population Estimates and Forecasts – Demographic Research Unit, California Department of Finance
  - Long-Term Socio-Economic Forecasts by County – Caltrans Transportation Planning Division
  - Quarterly Census of Employment and Wages (QCEW) - Bureau of Labor Statistics (BLS), US Department of Labor
  - County Business Patterns (CBP) - US Bureau of the Census
  - Longitudinal Employer-Household Dynamics (LEHD) Origin-Destination Employment Statistics (LODES) - US Bureau of the Census
  - Freight Analysis Framework (FAF)
- Other Data Sources
  - Pavement Condition Report (PCR) – Caltrans Division of Maintenance

Note that other data obtained from other studies will be used as needed for analysis. For example, regional transportation plans (e.g., SACOG and Butte County) may have economic or truck forecasts that can be used to supplement the recommended data sources. Recent vehicle count data such as the heavy duty truck counts conducted as part of the District 3 heavy duty truck model efforts may also be used to assist in the study.

## Exhibit 2: Recommended Freight Data and Analysis Sources

Data Source	Description	Data Year	URL	Pros	Cons
Freight Analysis Framework Version 3 (FAF3) - Federal Highway Administration (FHWA)	<p>Comprehensive multi-source database used for commodity flows. Reports tonnage, value, and ton-mile data and inter-regional freight flows by all modes for 2-digit STCC commodity code. The study team anticipates using this source to help identify general commodity flows to and from the district and to identify forecast trends.</p> <p>Primarily based on Commodity Flow Survey (CFS), and incorporates data from:</p> <ul style="list-style-type: none"> <li>PIERS Import/Export Database</li> <li>Waterborne Commerce of the United States - U.S. Army Corps of Engineers</li> <li>Public Use Carload Waybill Sample Federal Railroad Administration (FRA)</li> <li>2007 Census of Agriculture and the 2008 Agricultural Statistics - U.S. Department of Agriculture's (USDA)</li> <li>Petroleum Tank Truck Carriers Annual Report, American Trucking Association, Inc.</li> <li>Petroleum Supply Annual - Energy Information Administration (EIA)</li> <li>Freight Commodity Statistics, Association of American Railroads</li> <li>Fisheries of the United States 2008 - National Marine Fisheries Service (NMFS), National Oceanic and Atmospheric Administration (NOAA)</li> <li>National Input-Output Make and Use Tables - U.S. Bureau of Economic Analysis's</li> <li>Annual Report of oil pipeline companies - Federal Energy Regulatory Commission (FERC)</li> <li>Other secondary or indirect sources and reports</li> </ul>	2007-2040	<a href="http://www.ops.fhwa.dot.gov/freight/freight_analysis/faf/">http://www.ops.fhwa.dot.gov/freight/freight_analysis/faf/</a>	<ul style="list-style-type: none"> <li>Free and readily available</li> <li>Relatively easy to access and use</li> <li>Comprehensively covers patterns of major commodity flows by 2-digit STCC code</li> <li>Covers major Combined Statistical Areas (CSAs) in California</li> </ul>	<ul style="list-style-type: none"> <li>Aggregation to CSA level provides limited geographical detail that does not follow District boundaries</li> <li>No direct link to vehicle counts or to specific routes or corridors.</li> <li>Secondary movements from local distribution centers to retail stores or customers, local deliveries of construction materials, or movements of waste, scrap, and refuse are largely derived from freight carrier reported data sources, in some cases requiring the use of secondary or indirect data sources, such as location specific measures of industrial activity, employment or population, to allocate flows to specific geographic regions.</li> <li>Sources are samples, so there is the possibility that actual regional totals differ significantly from sample results</li> </ul>

Data Source	Description	Data Year	URL	Pros	Cons
California Vehicle Classification Counts – Caltrans Division of Traffic Operations	Truck classification data for recent years at 13 stations in District 3. These include a mix of automatic vehicle classification and weigh-in-motion (WIM) devices that measure axle weights and gross vehicle weights as vehicles drive over the detection site. They are more efficient than traditional weigh stations because they can measure weights at normal operating speeds. This source is anticipated to be used to supplement truck volume counts and to identify seasonal and time of day existing conditions.	2012	<a href="http://www.dot.ca.gov/hq/traffops/trucks/datawim/">http://www.dot.ca.gov/hq/traffops/trucks/datawim/</a>	<ul style="list-style-type: none"> <li>Provides 24-hour count data that can be used to identify the primary seasons, days of week, and times of day when trucks travel</li> </ul>	<ul style="list-style-type: none"> <li>Detailed dataset can be difficult to analyze</li> </ul>
California Truck Volumes – Caltrans Division of Traffic Operations	Truck volume estimates and counts. Reports total AADT, truck AADT, and truck percentages by 4 vehicle classes and percent trucks at multiple locations on the State Highway System. This source is anticipated to be used to identify corridors with high truck volumes.	1992-2011	<a href="http://trafficcounts.dot.ca.gov/">http://trafficcounts.dot.ca.gov/</a>	<ul style="list-style-type: none"> <li>Free and readily available</li> <li>Extensive coverage of the state highway system</li> </ul>	<ul style="list-style-type: none"> <li>Most volumes are estimates and some locations have not been counted in several years</li> </ul>
EMFAC2011 Mobile Source Emission Inventory – California Air Resources Board (ARB)	Inventory tool to assess the population, activity, and emissions from mobile sources. Reports on 28 classes of heavy duty trucks including emissions, vehicle-miles traveled (VMT), and annual trips. This source is anticipated to be used to evaluate truck historical VMT trends as well as forecast estimates for each county in the District.	2011-2050	<a href="http://www.arb.ca.gov/emfac/">http://www.arb.ca.gov/emfac/</a>	<ul style="list-style-type: none"> <li>Free and readily available</li> <li>Reports county-level VMT and trips by vehicle classification</li> <li>Estimates and forecasts consistent with regional estimates</li> </ul>	<ul style="list-style-type: none"> <li>Vehicle estimates based largely on vehicle registration data and may not reflect where vehicles primarily operate</li> </ul>
California Performance Measurement System (PeMS) – Caltrans.	Transportation system data collection, processing and analysis tool to assist traffic engineers, planners, researchers, policymakers and other users to assess the performance of the State Highway System and local arterials. Extracts real-time and historical data and presents this information in various forms. This source is expected to be used to identify congestion trends.	2001-2013	<a href="http://pems.dot.ca.gov">http://pems.dot.ca.gov</a>	<ul style="list-style-type: none"> <li>Free and readily accessible</li> <li>Comprehensive speed, volume, and delay information for major corridors</li> </ul>	<ul style="list-style-type: none"> <li>Does not cover many state highways in District</li> <li>Data quality can be an issue</li> </ul>

Data Source	Description	Data Year	URL	Pros	Cons
California County Population Estimates and Forecasts – Demographic Research Unit, California Department of Finance	Official State of California annual population estimates and forecasts 50 years into the future by county. Reports on population by various categories including race, age, income, and other variables. This source is anticipated to be used to identify historical and future population growth estimates to assist in evaluating future conditions.	Hist.-2060	<a href="http://www.dof.ca.gov/research/demographic/">http://www.dof.ca.gov/research/demographic/</a>	<ul style="list-style-type: none"> <li>• Free and readily available</li> <li>• Designated as the single official source of demographic data for state planning and budgeting</li> </ul>	<ul style="list-style-type: none"> <li>• Non census years are estimates</li> <li>• Historical data subject to revision</li> </ul>
Long-Term Socio-Economic Forecasts by County – Caltrans Transportation Planning Division	Forecasts to assist local and regional agencies in planning and travel forecasting efforts by providing general economic activity at the county level. Reports on population, crop and production value, and goods movement industry sector employment for historical and forecast years. This source is anticipated to be used to forecast employment by goods producing industries by county.	2006-2040	<a href="http://www.dot.ca.gov/hq/tpp/office/eab/socio-economic.html">http://www.dot.ca.gov/hq/tpp/office/eab/socio-economic.html</a>	<ul style="list-style-type: none"> <li>• Free and readily available</li> <li>• Consistent county-level economic and employment forecasts</li> <li>• Updated annually</li> <li>• Can be aggregated to district level</li> </ul>	<ul style="list-style-type: none"> <li>• Forecasts may not be consistent with locally produced forecasts</li> </ul>
Quarterly Census of Employment and Wages (QCEW) - Bureau of Labor Statistics (BLS), US Department of Labor	Quarterly count of employment and wages reported by employers covering 98 percent of U.S. jobs, available at the county, MSA, state and national levels by industry. Reports on employment using the North American Industry Classification System (NAICS). Principal sources of information on are from State Workforce Agencies (SWA) data collected for compliance with State Unemployment Insurance (UI) laws. This source can be used to develop the location quotient for District 3 counties as well as identify employment trends (similar to the socio-economic forecasts described above).	2001-2012	<a href="http://www.bls.gov/cew/">http://www.bls.gov/cew/</a>	<ul style="list-style-type: none"> <li>• Captures agricultural activities, railroads, and government sectors not covered by the US Bureau of the Census County Business Patterns</li> <li>• Online tools available to perform location quotient and other relevant analyses</li> </ul>	<ul style="list-style-type: none"> <li>• Sample based on unemployment insurance data. Firms not reporting unemployment data are not captured such as sole proprietors</li> <li>• Railroad sector data is partially covered</li> </ul>

Data Source	Description	Data Year	URL	Pros	Cons
County Business Patterns (CBP) - US Bureau of the Census	Annual series that provides sub-national economic data by industry using NAICS codes. The series is useful for studying the economic activity of small areas; analyzing economic changes over time; and as a benchmark for statistical series, surveys, and databases between economic censuses. This source can be used to supplement the BLS data where gaps exist.	1998-2011	<a href="http://www.census.gov/econ/cbp/index.html">http://www.census.gov/econ/cbp/index.html</a>	<ul style="list-style-type: none"> <li>Commonly used for economic forecasting at the county and even zip code level</li> </ul>	<ul style="list-style-type: none"> <li>Does not cover agricultural and railroad industries as comprehensively as the QCEW data</li> </ul>
Longitudinal Employer-Household Dynamics (LEHD) Origin-Destination Employment Statistics (LODES) - US Bureau of the Census	Provides detailed spatial distributions of workers' employment and residential locations and the relation between the two at the Census Block level. LODES also provides characteristic detail on age, earnings, industry distributions, and local workforce indicators. This source provides employment at the Census block group level. This can be used to develop maps showing where goods producing employment is concentrated in the District.	2002-2011	<a href="http://lehd.ces.census.gov/data/">http://lehd.ces.census.gov/data/</a> <a href="http://onthe-map.ces.census.gov/">http://onthe-map.ces.census.gov/</a>	<ul style="list-style-type: none"> <li>OntheMap online tool allows for the visual representation of transportation dependent industries at the Census block group level</li> <li>Incorporates QCEW data and supplemented by other economic censuses and surveys</li> </ul>	<ul style="list-style-type: none"> <li>Similar limitations as QCEW since based on similar data sources</li> </ul>
Pavement Condition Report (PCR) – Caltrans Division of Maintenance	Pavement inventory, identifies project needs, prioritizes pavement distress and summarizes condition of the State Highway System. The Project Recommendation Report suggests projects. PCR data comes from the annual Pavement Condition Survey (PCS), a visual inspection of roadways by "pavement raters" and an automated ride quality inspection that produces the International Roughness Index (IRI). Can be used to identify locations on the SHS where pavement improvements are needed.	2011	<a href="http://www.dot.ca.gov/hq/maint/Pavement/Pavement_Program/PDF/2011_SOP.pdf">http://www.dot.ca.gov/hq/maint/Pavement/Pavement_Program/PDF/2011_SOP.pdf</a>	<ul style="list-style-type: none"> <li>Only source for pavement condition on the State Highway System</li> <li>Readily accessible</li> </ul>	<ul style="list-style-type: none"> <li>Does not represent current conditions. Data can be up to two (2) years old</li> </ul>

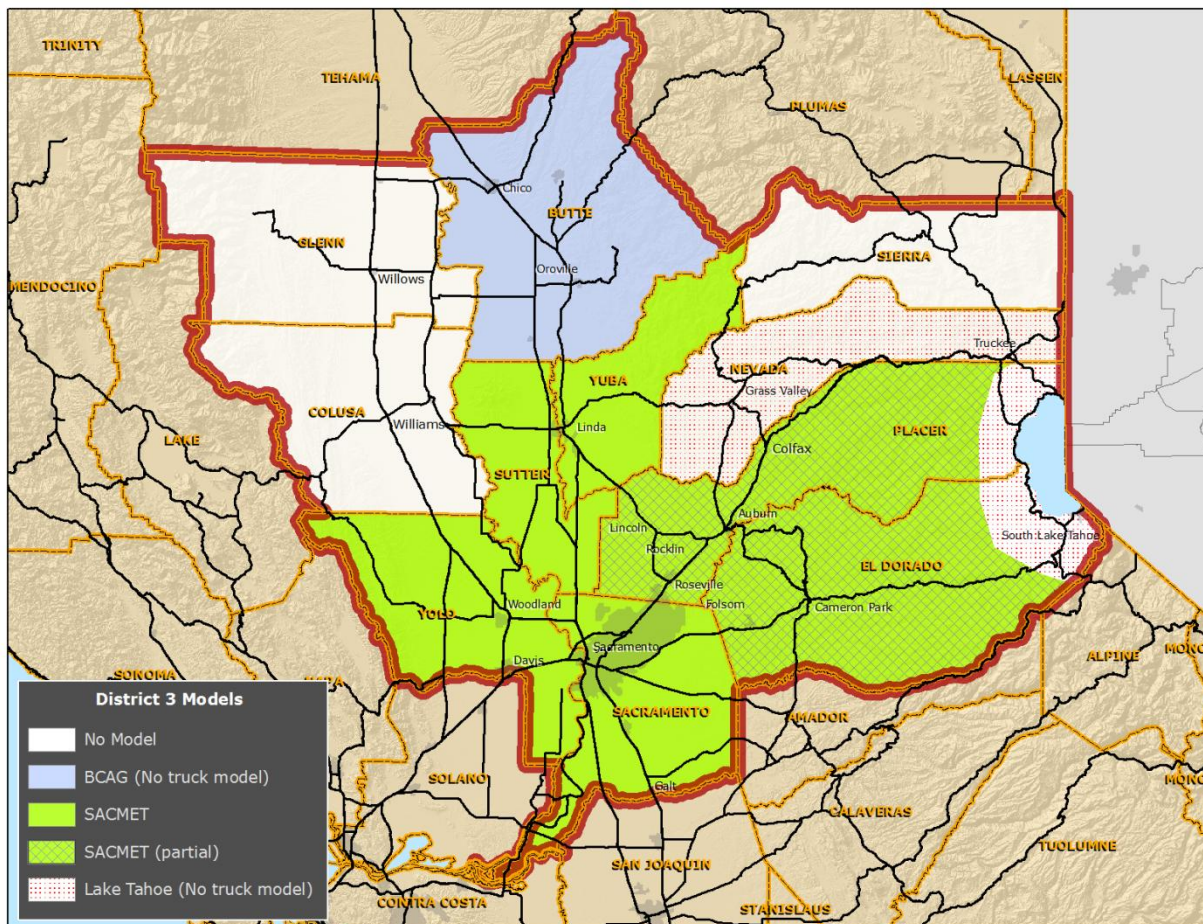
## Goods Movement Models

The study team reviewed two travel demand models related to goods movement that could potentially be applied to this effort as follows:

- Sacramento Area Council of Governments (SACOG) Sacramento Regional Travel Demand Model (SACMET) commercial vehicle model
- California Statewide Freight Forecasting Model (CSFFM).

We recommend using the SACOG SACMET commercial vehicle model for most of the traffic impact analyses performed for this study<sup>3</sup>. Data and forecast information from other sources can be applied as necessary to help evaluate and prioritize projects for areas outside of the SACMET commercial vehicle model. Exhibit 3 shows the coverage of regional travel demand models in District 3. Two of the regional models [Butte County Associated Governments (BCAG) and the Lake Tahoe model] do not have separate truck sub-models, but they may be usable for growth forecasts in those regions.

*Exhibit 3: Regional Travel Demand Models*



<sup>3</sup> The four-step SACMET truck model has recently been incorporated into the newer activity-based SACSIM model.

## Sacramento Area Council of Governments (SACOG) Commercial Vehicle Trip Generation and Distribution Model

SACOG maintains the Sacramento Regional Travel Simulation Model (SACSIM). SACSIM is a newly developed activity-based tour model used in the preparation of the Metropolitan Transportation Plan (MTP) analysis. The model covers most of the six county SACOG region (all of Sacramento, Sutter, Yolo and Yuba counties and the portions of Placer and El Dorado counties below the Sierra Nevada ridge line). The model does not cover the District 3 counties of Butte, Colusa, Glenn, Nevada, and Sierra counties. However, this model covers more than half of the State Highways in the district and nearly two-thirds of all roadway mileage in District 3.

SACSIM is the first regional travel demand model which uses parcel/point land use input data rather than aggregating data to Travel Analysis Zones (TAZs). The parcel-level land use data, combined with the population synthesis approach, provides an unprecedented level of model sensitivity and detail regarding representation of land use and its effects on travel behavior. SACSIM represents travel activities as "tours" or series of trips connecting activities a person engages in during the course of a normal day. SACSIM was designed to capture land use and transportation inter-relationships.

The SACOG commercial vehicle model component of SACSIM is a conventional four-step travel demand model at the Transportation Analysis Zone (TAZ) level with 2- and 3+ axle commercial vehicle trip types. Larger vehicle types are not differentiated in the model.

Commercial vehicle trip rates used in the model are dated being based on a regional truck count study performed in 1998. The model does use congested midday travel times which is reasonable given the recent time of day counts conducted as part of the *Develop a Reliable Planning-Level Methodology to Forecast Heavy Vehicle (Truck) Traffic Growth on State Highway Routes in the SACOG Region* (Dowling Associates / Kittelson & Associates, Inc., 2013).

That study also reviewed the SACOG model and noted one major limitation in that SACOG combines the truck and auto trip matrices prior to assignment to the model network making it impossible to readily access truck volumes (or percentages of total volume) at the link or screenline level. The SMG team has obtained the script used by the District 3 consultant that can be used to identify truck volume percentages at a link level.

The study also compared heavy duty truck percentages (i.e., 3+ axle vehicles) to recent truck counts at ten locations in the District and found that the model came within three-percent of actual truck percentages at seven of the ten count locations over a 24-hour count period, but may overstate truck travel during peak travel times given that it did not match all count locations.

With these limitations, and despite lack of coverage for the entire district, the study team believes it to be the best single source for developing truck impacts for future projects. In areas that the model does not cover, other forecast sources can be used (e.g., growth estimates from existing goods movement trends). More information on SACSIM can be found at:

<http://www.sacog.org/mtp/2035/eir/Appendices/Appendix%20H%20-%20Transportation/Appendix%20H.pdf>

## **California Statewide Freight Forecasting Model (CSFFM)**

The CSFFM, under development at the University of California, Irvine (UC Irvine), by the Institute of Transportation Studies is intended to help Caltrans and the Air Resources Board better understand freight movement in California. However, the CSFFM may not be calibrated by the completion of this current effort to be able to be used for analysis.

When the model forecasts commodity flows and commercial vehicle flows within California, it will take into consideration socioeconomic conditions, land use policies related to freight, environmental policies, and multimodal infrastructure investments. The model runs using CUBE, a commercially available transportation modeling program. Alternative future network and socio-economic scenarios will need to be run on that system.

More information on the model can be found at <http://www.dot.ca.gov/hq/tsip/otfa/csffm/index.html>.

## **Existing and On-Going Studies and Planning Efforts**

This section summarizes the existing and on-going studies and planning efforts that may be useful as part of this effort. The study team has grouped these plans into four categories:

- Regional Transportation Plans (RTPs)
- County General Plans
- Corridor System Management Plans (CSMPs)/Transportation Concept Reports (TCRs)
- Other Goods Movement Planning Efforts

Each of these categories will be discussed in the following sections.

## Regional Transportation Plans (RTPs)

The study team has reviewed eight RTPs in District 3. The RTPs will be used to identify regional issues and to provide planned and conceptual projects to the study team. Exhibit 4 is a table listing the six plans, provides their website addresses (if available), and the District 3 counties represented in the plan. Key findings from each of these RTPs are presented in the summaries that follow the exhibit.

*Exhibit 4: Regional Transportation Plans Reviewed*

Regional Transportation Plan (RTP)	Responsible Agency	Date Adopted	URL	Butte	Colusa	Glenn	Sierra	El Dorado	Nevada	Placer	Sacramento	Sutter	Yolo	Yuba
Butte County Metropolitan Transportation Plan/ Sustainable Communities Strategy (MTP/SCS)	Butte County Association of Governments	Dec-12	<a href="http://www.bcag.org/Planning/2012-MTP/index.html">www.bcag.org/Planning/2012-MTP/index.html</a>	◆										
El Dorado County Regional Transportation Plan 2010-2030	El Dorado County Transportation Commission	Nov-10	<a href="http://www.edctc.org/3/RT/P2010-30.html">www.edctc.org/3/RT/P2010-30.html</a>					◆						
Glenn County Regional Transportation Plan Update	Glenn County Transportation Commission	Aug-09	<a href="http://gcppwa.net/documents/Report_Complete_000.pdf">gcppwa.net/documents/Report_Complete_000.pdf</a>			◆								
Colusa County Regional Transportation Plan	Colusa County Transportation Commission	Dec-08	n/a		◆									
Lake Tahoe Regional Transportation Plan	Tahoe Metropolitan Planning Org. /Tahoe Regional Planning Agency	Dec-12	<a href="http://www.tahoempo.org/rtp_final/TAHOE%202012%20RTP%20Final.pdf">www.tahoempo.org/rtp_final/TAHOE%202012%20RTP%20Final.pdf</a>					◆	◆					
Nevada County Regional Transportation Plan	Nevada County Transportation Commission	Jul-11	<a href="http://www.nctc.ca.gov/documents/RTP/">www.nctc.ca.gov/documents/RTP/</a>						◆					
Placer County 2035 Regional Transportation Plan	Placer County Transportation Planning Agency	Sep-10	<a href="http://pctpa.net/library/placer-county-2035-regional-transportation-plan-document/">pctpa.net/library/placer-county-2035-regional-transportation-plan-document/</a>							◆				
SACOG 2035 MTP/SCS	Sacramento Area Council of Governments (SACOG)	Apr-12	<a href="http://www.sacog.org/2035/mtpscs/">www.sacog.org/2035/mtpscs/</a>					◆		◆	◆	◆	◆	◆
Sierra County Regional Transportation Plan	Sierra County Transportation Commission	Mar-10	<a href="http://www.sierracounty.wa.gov/county_docs/transportation/RTP/">www.sierracounty.wa.gov/county_docs/transportation/RTP/</a>				◆							

### ***Butte County Regional Transportation Plan (2008)***

The last Butte County RTP was adopted in 2012. The RTP goods movement action element reports that State Routes 32, 70, and 99 are commonly used to transport freight in the county, and Chico, Oroville, and Paradise have designated truck routes. The reported lack of a continuous four lane facility through the county is considered both a truck safety and mobility issue. Approximately 24 to 50 trains a day serve Butte County on the Union Pacific tracks, and rail pedestrian conflicts are reportedly acute in the vicinity of California State University, Chico since the university is on one side of the tracks and residential housing on the other. There are several railroad sidings and spurs documented in the RTP:

- Craig rail siding and Adelaide spur south of Oroville serve several lumber mills
- Oroville area sidings are currently used by manufacturers
- Kramm and Elsey sidings just north of Oroville are passing sidings with limited use for commerce and manufacturing
- James and Pulga passing sidings are in Feather River Canyon
- A new siding has been added in Chico at the Chico Bean Growers facility.

Chico Municipal Airport is the primary airport for air cargo service for Butte, Glenn, Tehama, and Plumas. Paradise Skypark is used on occasion by commercial cargo as a reliever airport when the Chico Airport is fogged in. The RTP does not forecast air cargo growth.

### ***Colusa County Colusa County Regional Transportation Plan Update (2009)***

The Colusa RTP is currently being updated, and the last RTP was adopted in 2009. SR-20 is the only Principal Arterial in Colusa County. The route is a High Emphasis Focus Route and the major truck freight corridor between US-101, I-5, and further east. Recommended improvements for the corridor include the addition of passing lanes.

California Northern Pacific Railroad Company (CFNR) provides freight service through the County with mainline tracks traversing the county adjacent to I-5.

According to the RTP, existing trends in truck traffic are expected to continue. The movement of agricultural products will continue to be primarily by truck, and there is expected to be modest growth in truck traffic. Truck travel is considered the primary source of roadway degradation for local facilities. Truck travel mixed with agricultural uses provides for roadway conditions that are substantively different during harvest seasons (late summer/fall) than non-agricultural counties, and will drive the future roadway restoration and maintenance needs. The county may consider weight limits on select local roads and may want to employ Caltrans' commercial vehicle operations (CVO) technologies to improve commercial and fleet operations.

### ***El Dorado County Regional Transportation Plan 2010-2030***

The El Dorado County Transportation Commission adopted the RTP in 2010. The Goods Movement action plan of the RTP recognizes that trucks are the primary means of transporting goods in the county, identifies US 50 as the “backbone” transportation facility in the county, and also identifies Sacramento Mather Airport as a primary intermodal facility for air cargo to and from the county.

### *Glenn County Regional Transportation Plan Update (2009)*

Glenn County last updated its RTP in 2009. Elements of the county transportation system related to industrial and commercial activity include the following:

- Road systems with adequate structural strength to support large trucks on a regular basis
- Road systems with adequate Level of Service (LOS) throughout the day for freight and employee movements
- Availability of adequate rail loading and unloading sites for freight and regular service to them
- Airport facilities to support agricultural operations (crop dusting and limited freight and passenger movements in small, private planes).

SR-32 is considered the most impacted roadway in the county, particularly through Orland, with LOS D, which may degrade to LOS E. To address this need the Glenn County Transportation Commission (GCTC) proposed several projects to connect County Road 27 with County Road P to become a truck route between I-5 and SR-32, east of the City of Orland to reduce truck traffic through the city.

SR-162 also shows LOS D between I-5 and First Street, which is forecast to continue through 2030. Other than these two major roadway issues, the transportation commission conducted a trucking firm survey in 2009 that concluded that the county system has no major issues, and that the county is generally responsive to requests. There were two specific stakeholder-identified issues:

- Road N is gravel between 25th and 27th and needs paving
- Intersection at SR-99W and Wood Street has a very tight right turn for large trucks

The CFNR provides freight service through the county on tracks parallel to I-5 and just east of Old Highway 99 through the Cities of Willows and Orland. The West Valley/Richland Spur is an east-west branch line connecting Orland to Hamilton along County Road 9. A small east-west branch line in the City of Willows runs north of SR-162 connecting to the Johns Manville manufacturing facility on County Road 48.

The RTP discusses a potential railroad freight depot in Orland that may improve transportation options to Glenn County agrarian, forestry, and local businesses. The plan recognizes the limitations of the county to influence the extent or quality of rail service, but that it can possibly help secure financing for county rail loading and unloading facilities (without adversely impacting the ability to meet other county transportation needs).

The RTP noted a specific industrial expansion that may impact goods movement in the county. The California Olive Ranch, Inc. (COR) plans to construct and operate a 36,390 square foot (sq. ft.) bulk olive oil storage facility in association with an existing 22,934 sq. ft. olive oil processing facility in Glenn County. COR has planned to gradually increase capacity from 10-tons per hour to 80-tons per hour by approximately 2015. The function of the proposed facility is to provide the capability to store large quantities of olive oil for an extended period, similar in operation to rice dryers and silos. Because of the storage, the deliveries can occur over an extended period, opposed to immediately after processing.

### *Lake Tahoe Regional Transportation Plan (2012)*

The Lake Tahoe RTP was adopted in December 2012. The Tahoe Region is considered a final destination for goods, and trucks account for the majority of goods moved to and from the region. The nearest freight rail terminal is in the Town of Truckee, which is served by the BNSF Railway. The Reno-Tahoe International Airport (RTIA) provides air cargo service with freight comprising about 15 percent of the total landed weight at RTIA.

The RTP has no planned projects that specifically address goods movement. Since most of the Region's goods are delivered by truck, projects that improve roadway access will benefit truckers moving goods. While complete streets projects are focused on pedestrians and non-motorized travel, they can also be designed to accommodate over-sized vehicles such as delivery trucks. The US Hwy 50 South Shore Community Revitalization Project and State Route 89/Fanny Bridge Community Revitalization Project would redirect truck traffic out of the heart of the Stateline and Tahoe City town center areas, allowing drivers to avoid high levels of pedestrian and bicycle traffic there.

### *Nevada County Regional Transportation Plan (2011)*

2010 Nevada County Regional Transportation Plan was adopted in 2011. SR-49 is considered "the lifeline for much of Nevada County", connecting Grass Valley and Nevada City and is used by freight and lumber traffic. Other major freight corridors in the county include: I-80 and SR-20, 89, 174, and 267.

One of the high priority projects proposed in the county RTP is to widen the SR-89 Union Pacific Railroad (UPRR) grade crossing at the "Mousehole" in Truckee. Oversized loads cannot pass through the 14' 6" and 15' height restriction. Though the UPRR runs along I-80 most of the length of the county, there are no rail freight loading and unloading facilities in Nevada County.

The Nevada County Airport in Grass Valley and the Truckee Tahoe Airport do not serve as hubs for air cargo service. The Chico, Redding, Sacramento, and Reno airports provide air cargo service for Nevada County.

The Goods Movement Action Plan in the RTP has the following short-term actions:

- Maximize the use of the existing goods movement infrastructure of the region
- Protect the transportation infrastructure from deterioration through on-going maintenance and rehabilitation
- Review transportation projects to ensure that they minimize conflicts between trucks and other vehicles
- Implement improvements that will reduce congestion and improve safety.

It also provides several long-term actions:

- Support the improvement or increase in goods movement modes available to the county
- Support projects that facilitate interregional, multi-modal goods movement to commercial and industrial areas in Nevada County.

### *Placer County 2010-2035 Regional Transportation Plan (2010)*

The Placer County RTP was updated in 2010. The Goods Movement Action Plan identifies I-80 as the primary goods movement corridor in the county. The Union Pacific Railroad (UPRR) rail yard is located in Roseville, and the RTP reports that with the growth of intermodal container freight at the Port of Oakland, rail is playing an increasing role in the region and creates regional challenges including:

- Ensuring the safety of at-grade railroad crossings
- Anticipating longer waits at railroad crossings on key arterials
- Avoiding conflicts between freight and passenger rail services
- Promoting freight yard expansions and other capital improvements needed to accommodate this growth.

Regional air freight, utilized extensively by manufacturers in Roseville, Rocklin and Lincoln, is handled either at Sacramento International Airport or at Mather Airport, although United Parcel Service (UPS) currently makes two flights per day out of the Lincoln Regional Airport.

There are no projects included in the 2035 RTP that are specifically identified as “goods movement” projects. There are many projects identified in the 2007 SACOG Good Movement Action Plan, which are considered supportive of goods movement.

### *SACOG 2035 Metropolitan Transportation Plan/ Sustainable Communities Strategy (MTP/SCS) (2012)*

The SACOG MTP/SCS covers a six county region including the western portions of El Dorado and Placer Counties. Being the largest MPO in the District, the MTP/SCS has a comprehensive goods movement project list covering a wide range of modes. The following are highlights from the most recent MTP/SCS.

#### *Trucking*

Most freight in the region is carried by truck, a trend likely to continue according to the RTP. Both I-5, linking the Sacramento region and Central Valley with southern California seaports, and I-80, linking the Bay Area, Sacramento, and areas east of the Sierra, are major truck freight routes through the region. As businesses move to suburban areas with limited highway access, more of the truck trips internal to the region must also use arterial roads. Existing industrial re-use areas are not typically alongside freeways, but located on arterials such as Power Inn, North Watt, and Sunrise.

#### *Air Cargo*

Sacramento County has designated Mather Field as the region’s air cargo facility, though Sacramento International Airport handled more air cargo than Mather in 2010.

Most of this volume is handled by “integrated carriers” such as FedEx, UPS, DHL, and Golden State Overnight, while “belly cargo” handled by passenger airlines accounts for the remainder.

Air cargo growth, while dramatic during the 1990s, slowed significantly after 2001. Between 2005 and 2010, air cargo dropped by 37 percent at Mather and 9 percent at Sacramento International Airport.

Most of the region's air cargo is inbound, consisting of goods to meet the needs of the local population. As very little is manufactured in the region, there is considerably less demand for outbound air cargo.

Planned improvements at Mather to accommodate more air cargo stalled as a result of litigation from local jurisdictions over noise issues. Nonetheless, aviation plays a key role in the supply chain, especially in terms of high-value-added goods, like specialty agricultural crops.

Based on data reported in the MTP, California airborne agricultural exports in 2004 totaled \$659 million, an increase of nearly 60 percent since 2000. In addition, for high value-added crops like cherries, strawberries, asparagus, and organically-raised produce, air cargo offers the only means for exploiting overseas markets. California's agricultural exports typically head to Japan, China, South Korea, Taiwan, and Hong Kong, while rail and trucks facilitate trade with Mexico and Canada.

The Sacramento region is still a relatively minor player in the air cargo arena, as more than 90 percent of the state's airborne freight moves through Los Angeles or San Francisco area airports. With the economic downturn of recent years, it is unclear how well the Sacramento region is positioned to take advantage of that growth and increase its market share in the California air cargo industry. Most air cargo-related truck traffic consists of small delivery trucks with only a few larger 53' trucks. The only significant truck related need that has been identified is for improved truck access to points north and south of Mather Field.

### Pipelines

Petroleum products, specifically, gasoline, diesel and jet fuel, are transported by pipelines from the Bay Area to the Sacramento region. Approximately 400 local truck trips are dispatched every day from four Sacramento River terminals and the Bradshaw terminal to distribute gasoline and diesel fuel throughout the region.

### Port of West Sacramento

The port has good connections via I-5, I-80, and railroad lines. The Sacramento River Deep Water Ship Channel project is planning to deepen the 43-mile ship channel connecting the Port to San Francisco Bay from 30 feet to 35 feet along its entire length, allowing more than 75 percent of fully loaded oceangoing freight ships to serve the Sacramento region, compared to less than 40 percent currently. The new M-580 Marine Highway project a trade corridor is between West Sacramento, Oakland and Stockton. The Port is the major launching point for rice grown in the region to be exported to Asia and the Middle East.

### Goods Movement and the Agricultural Economy

Ninety-three percent of the 1.8 million tons of vegetables produced are tomatoes, most of which leave the region for processing. Similarly, 90 percent of the 760,000 tons of grain produced in the region is rice, the vast majority of which is exported to Asia and the Middle East.

Agriculture depends upon rural roads, highways, and freeways. From July to October 2007, 650 trucks were required daily to haul tomatoes grown on more than 52,000 acres in Sacramento, Sutter, and Yolo counties to processing facilities from Woodland to Bakersfield. Processing plants were previously scattered around the region, but today many have been consolidated, particularly in the central and

southern San Joaquin Valley. SACOG's research suggests that there is currently not an efficient means of moving agricultural commodities from the region's rural areas to the urban areas. There is a lack of a centralized distribution point in the urban areas—but it is also due to the difficulties of getting larger trucks onto rural roads. Agricultural tourism sites (e.g. wineries) face their own difficulties around transportation, with increased traffic on rural roads, particularly during peak agricultural tourism season in the fall.

SACOG identified potential agricultural expansion opportunities in the region through strategies such as: creation of a branded marketing campaign for farm products produced in the region to foster greater local demand; expansion of retail stores and restaurants featuring local foods; increased capacity to handle local foods within the existing consolidation and distribution systems; development of more local distribution, consolidation, and value-added facilities for food that is currently produced in the region but shipped out and returned in a processed form; and increasing local production of foods that are currently brought in from outside the region.

### Goods Movement Issues

A number of the issues facing goods movement in the region, especially trucking, are described in the RTP:

- **Truck Friction with Neighbors**
  - Truck/neighborhood conflicts, such as issues with truck volumes, noise and speed, and parking on major streets or arterials that front or abut residential areas
  - Issues with trucks driving onto sidewalks and into poles, signs and streetlights
  - Congestion issues: Trucks diverting onto arterials and rural roads to avoid congestion; trucks backing up traffic, especially on two-lane highways that act as rural main streets; heavily loaded trucks that accelerate slowly from signals or in congested traffic; and in some areas, truck volumes that can be a direct cause of congestion
  - Geometric limitations: Many truck operators are moving toward larger vehicles for the efficiency they provide; however, these larger vehicles often encounter problems while negotiating the region's roadways, including the space needed for turning and for parking while delivering products
  - Lack of permitted overnight parking facilities
- **Lack of Private Sector Information**
  - Freight does not have some sort of constituency (e.g., bicycle and pedestrian advocates, transit riders)
  - Difficult to identify routes where trucking industry is having problems with congestion, other vehicles, turning movements or lane departure issues
  - Difficult to forecast demand on roads
  - Pavement deterioration, increases in truck weight limits and greater use by trucks of local routes have contributed to swifter road deterioration
- **Lack of Goods Movement Funds**
  - Reliable funding sources for goods movement investments are severely limited in the SACOG region

- Modal Efficiencies for Goods Movement the 2007 Goods Movement Study identified opportunities to reduce truck vehicle miles traveled by:
  - Importing cement by ship through the Port of West Sacramento. Cement importers are constructing port terminals for that purpose, but success in reducing regional truck travel will depend on good highway access to and from the Port of West Sacramento and channel deepening to accommodate modern vessels.
  - Trans-loading inbound building materials at McClellan. Maximizing the benefit, however, may depend on good truck routes between McClellan and the various centers of demand as the construction industry rebounds.

### *Sierra County Regional Transportation Plan (2010)*

The most recent RTP, updated in 2010, does not list any capacity increasing roadway projects, and reports that the county does not currently experience congestion. The Sierra County Transportation Commission (SCTC) solicits feedback from truck generating business for input to the RTP. The predominant generator of freight movements is through traffic, particularly on the I-80 and US-395 corridors.

Local freight generators in Sierra County largely consist of dispersed natural resource-based activities, particularly timber production and agriculture. Trucking activity in Sierra County generally includes the transport of timber and agricultural products including the seasonal transport of cattle from summer to winter pastures. During the early spring and late fall (cattle transporting season) three to four trucks per day are generated in the county, and an average of eight to ten trucks per day are generated from the timber industry during the summer season.

County roadways that are primary travel routes for Sierra County trucks include:

- Westside Road/Beckwourth Calpine Road (A23)
- Heriot Lane
- West Willow
- Ridge Road to Alleghany
- Brandy City Road
- Henness Pass Road.

The RTP cites few deficiencies on county roads, except for a potential need for future maintenance repairs on A23.

In 2004, Sierra County Department of Transportation received approval from Caltrans to designate “Terminal Access” for SR-49 from Loyaltown to Sattley and along SR-89 from Truckee to Sattley provided appropriate signage is displayed. This designation allows Surface Transportation Assistance Act vehicles (trucks with a 53’ trailer and a 40’ kingpin to rear axle) to travel a specified route through this area; whereas previously trucks of this length were not allowed north of Cottonwood Creek on SR-89. In the past, truck length regulations restricted agricultural goods movement in the Sierra Valley area as trucks transporting cattle to and from the Sacramento Valley often exceeded the maximum truck length.

The Sierraville Dearwater Field Airport, located one mile east of Sierraville, is the only designated airport in Sierra County and is classified as a Basic Utility airfield. There are no services, no fixed base operations, no snow removal and no hangars. Air freight in the county is limited to occasional service by private aircraft.

## County General Plans

The study team reviewed County General Plans for 10 of the 11 District 3 counties shown in Exhibit 5. Similar to the RTP review, the review of general plans will assist the study team in identifying goods movement needs.

Of note in the review of the general plans is that the Yolo County plan provided targeted trucking corridors, which are listed in Exhibit 6. Other plans discussed policies to maintain mobility and safety for goods movements or to improve regional competitiveness. Finally, others described specific truck corridors and issues.

### Exhibit 5: General Plans Reviewed

County	Relevant General Plan Information	General Plan Date	County General Plan URL
Butte	No specific discussion of trucks, freight, or goods movement. Discusses the BCAG 2008-2035 RTP.	Amended Nov-12	<a href="http://www.buttegeneralplan.net/">http://www.buttegeneralplan.net/</a>
Colusa	No specific discussion of trucks, freight, or goods movement other than CIRC 3-c that says that County Department of Public Works (DPW) to bi-annually review truck routes. Policy Action N1-F calls for the designation of truck routes.	Jul-12	<a href="http://www.countyofcolusa.com/index.aspx?nid=137">http://www.countyofcolusa.com/index.aspx?nid=137</a>
El Dorado	Mentions US-50 as the primary freight corridor. Policy TC-1o says the Co. will work with Placerville and South Lake Tahoe to establish a system of designated truck routes through urban areas. Sacramento-Placerville Transportation Corridor (SPTC) support improvements to maintain viability as freight corridor.	Jul-04	<a href="http://www.edcgov.us/Government/Planning/Adopted_General_Plan.aspx">http://www.edcgov.us/Government/Planning/Adopted_General_Plan.aspx</a>
Glenn	Refers to the GCTC 2005 RTP. Mentions CR-27 "truck route" b/n I-5 and SR-32 to minimize impacts to City of Orland. CR-57/I-5 IC for truck traffic monitoring. Local farm products include raw milk, rice, olives, almonds, and various grains. Policy I.6 mentions adopting truck routes.	May-2005	<a href="http://gcplanupdate.net/">http://gcplanupdate.net/</a>
Nevada	Most truck traffic enters and exits Nevada County on Routes 20, 49, 174, and I-80. No truck routes designated because no other alternative routes for goods movement. Urban areas such as Grass Valley and Nevada City have delineated truck routes. These routes are designated to avoid obstructions, residential neighborhoods, or to prevent roadway damage associated with heavy vehicle travel.	Amended 2010	<a href="http://www.mynevadacounty.com/nc/cda/planning/Pages/Nevada-County-General-Plan.aspx">http://www.mynevadacounty.com/nc/cda/planning/Pages/Nevada-County-General-Plan.aspx</a>

County	Relevant General Plan Information	General Plan Date	County General Plan URL
Placer	No specific discussion of trucks or goods movement.	May-2013	<a href="http://www.placer.ca.gov/departments/communitydevelopment/planning/documentlibrary/commplans/pcgp">http://www.placer.ca.gov/departments/communitydevelopment/planning/documentlibrary/commplans/pcgp</a>
Sacramento	Discusses policies to improve regional transportation facilities for freight. Discusses the importance of the agricultural sector and improving international trade.	Amended Nov-2011	<a href="http://www.per.saccounty.net/PlansandProjectsIn-Progress/Pages/GeneralPlan.aspx">http://www.per.saccounty.net/PlansandProjectsIn-Progress/Pages/GeneralPlan.aspx</a>
Sierra	Circulation element is from the 1996 plan. Discussion of turnouts and passing lanes needed on SR-89.	Oct-1996	<a href="http://www.sierracounty.ca.gov/DocumentCenter/View/185">http://www.sierracounty.ca.gov/DocumentCenter/View/185</a>
Sutter	Farm-to-Market Connectivity. Protect and enhance existing rail facilities.	Sep-10	<a href="http://www.co.sutter.ca.us/doc/government/depts/cs/ps/gp/gp_document_s#background">http://www.co.sutter.ca.us/doc/government/depts/cs/ps/gp/gp_document_s#background</a>
Yolo	Provides list of targeted county routes.	Amended 2011	<a href="http://www.yolocounty.org/Index.aspx?page=1514">http://www.yolocounty.org/Index.aspx?page=1514</a>
Yuba	Identifies policy elements for the “Safe and efficient movement of raw materials and finished goods including: <ul style="list-style-type: none"> <li>• Maintaining truck route system and limiting truck traffic to those routes</li> <li>• Accommodate freight and passenger rail service in specific plans and other development project plans</li> </ul>	Jun-2011	<a href="http://www.co.yuba.ca.us/departments/community%20development/planning/Default%20Pages/2030%20General%20Plan.aspx">http://www.co.yuba.ca.us/departments/community%20development/planning/Default%20Pages/2030%20General%20Plan.aspx</a>

*Exhibit 6: Yolo County List of Targeted Trucking Corridors*

Targeted Trucking Corridor	From Route	To Route
County Road 6	County Road 88	I-5
County Road 13	County Road 14	SR-113
County Road 14	County Road 85	County Road 13
County Road 19	County Road 90A	County Road 94B
County Road 21A	County Road 85B	SR-16
County Road 22 (Old River Rd)	I-5	West Sacramento City Limit
County Road 23	County Road 85B	County Road 89
County Road 24	County Road 95	County Road 98
County Road 27	County Road 89	County Road 102
County Road 28H	County Road 102	County Road 105
County Road 31	County Road 93A	County Road 98
County Road 32/Russell Blvd	I-505	County Road 31
County Road 32A	Davis City Limit	I-80
County Road 85	County Road 14	SR-16
County Road 85B	SR-16	County Road 23
County Road 89	SR-16	Winters City Limit
County Road 94B	County Road 19	SR-16
County Road 95	SR-16	County Road 31
County Road 98	SR-16/Main	Solano County Line
County Road 99W	Colusa County Line	SR-16
County Road 102	SR-113	Woodland City Limit
County Road 102	Woodland City Limit	Davis City Limit
County Road 105	County Road 28H	County Road 32A
Clarksburg Road	SR-84	South River Road

## Corridor System Management Plans (CSMPs)/Transportation Concept Reports (TCRs)

The study team reviewed 40 corridor study plans and reports representing 30 State Highway corridors in District 3. These studies are listed in Exhibit 7. The table also briefly summarizes relevant goods movement issues identified in each report.

There are four types of plans or report that were reviewed:

*Corridor System Management Plans (CSMP)* - comprehensive, integrated management plan for increasing transportation options, decreasing congestion, and improving travel times in a transportation corridor. A CSMP includes all travel modes in a defined corridor – highways and freeways, parallel and connecting roadways, public transit, and bikeways.

*State of the Corridor Reports (SOTC)* - annual report on the ongoing implementation of CSMP strategies and movement towards integrated multimodal corridor system management, as well as anticipated corridor mobility challenges, and impediments to CSMP implementation.

*Transportation Concept Reports (TCR)*, formerly *Transportation Corridor Concept Reports (TCCR)* - long-range planning document that describes the current characteristics of the transportation corridor and establishes a twenty-year planning concept. The TCR defines the Caltrans goal for the development of the transportation corridor in terms of level of service (LOS) and type of facilities, and identifies the conceptual improvements needed to reach those goals. Facility information (e.g., roadway widths, number of lanes) contained in the TCR represents a preliminary planning approach to identifying candidate improvements and to determining estimated costs. All information in TCR documents is subject to revision as conditions change and new information is obtained. Consequently, the nature and the size of identified improvements may change as they move through the project development stages. Final determinations are made at the time of project planning and design.

These corridor studies will be useful to the study team in that they provide 20-year traffic forecasts for the corridors. Where possible, the study team anticipates using the SACOG truck model to evaluate future conditions as described earlier. However, in areas not covered by a model, forecasts from these plans and reports will be used.

*Exhibit 7: List of Corridor Studies and Relevance to Goods Movement*

Corridor	Corridor Study Type	Study Title	Year	Relevant Information
005	Transportation Corridor Concept Report (TCCR)	I-5 Transportation Corridor Concept Report	2010	Route extends 796 miles in California, from the International Border Crossing at San Ysidro to the California/Oregon Border. As an Interregional Road System (IRRS) route, this major north-south facility plays a critical role in California's economy by accessing a multitude of interstate, state, and local facilities and providing throughput to accommodate high volumes of commute and interregional traffic along with rapid growth in interstate/interregional freight movements.
005/ 099	State of the Corridor Report (SOTC)	State of the Corridor Report: 2010 Report on the SR-99 & I-5 Corridor System Management Plan	2010	No specific discussion of freight/goods movement however, states extension of light rail as one of the major corridor accomplishments.
005/ 099	Corridor System Management Plan (CSMP)	SR-99/Interstate 5 Corridor System Management Plan	2009	Corridors include SR-99 from the San Joaquin County Line to US-50, SR-99 from I-5 to SR-20, I-5 from Hood-Franklin Road to SR-113 (north), and select parallel roads, transit services, and bike routes. SR-99 has high truck volumes with significant increases in truck traffic during peak agricultural seasons. I-5 serves as the transportation backbone of the State of California and the western United States: it connects travelers between Canada and Mexico, and supports vital trade and goods movement routes that sustain California's economy.
012	Transportation Concept Report (TCR)	SR-12 Transportation Concept Report	2012	Route has 6 segments in San Joaquin County/ 3 segments in Calaveras County. Functions as a shorter and more efficient haul route for freight shipments from the North Bay to Southern and Central California than via the Bay Area. In particular, SR-12 provides a vital link between the agricultural counties of the northern San Joaquin Valley with the counties north of the San Francisco Bay. SR-12 also provides a direct freight and transportation connection between wineries in San Joaquin County and the Mother Lode with industries supporting the wineries in Napa and Sonoma Counties.
016	Transportation Corridor Concept Report (TCCR)	SR-16 Transportation Corridor Concept Report	2012	Route is approximately 74 miles long and runs west to east through open spaces, farmland, and rural areas in Colusa and Yolo County, and the urban fringes of Sacramento County. SR-16 has a wide variety of users including commuters, recreational travelers, freight truck drivers and farm equipment operators. No other discussion of freight/goods movement.

Corridor	Corridor Study Type	Study Title	Year	Relevant Information
020	Transportation Corridor Concept Report (TCCR)	SR-20 Transportation Corridor Concept Report	2009	“Ocean to mountains” route that begins at SR-1 near Fort Bragg and ends at I-80 near Emigrant Gap. Within District 3, the route runs 122 miles west to east through the Colusa, Sutter, Yuba, and Nevada counties. No discussion of freight/goods movement.
028	Transportation Corridor Concept Report (TCCR)	SR-28 Transportation Corridor Concept Report	2012	Part of the circular route around Lake Tahoe that extends from SR-89 in Tahoe City to the Nevada State Line. No discussion of freight/goods movement.
032	Transportation Corridor Concept Report (TCCR)	SR-32 Transportation Corridor Concept Report	2011	Two-lane conventional highway connecting I-5 at Orland in Glenn County with SR-36 between Chester and Mill Creek in Tehama County. In the past, SR-32 carried primarily local, farm-to-market and to a lesser degree, regional commute traffic volumes. Today, SR-32 between I-5 in Orland and SR-99 in Chico has experienced a substantial increase in commute traffic as a result of growth in commercial and residential development.
045	Transportation Corridor Concept Report (TCCR)	SR-45 Transportation Corridor Concept Report	2009	North-south two-lane conventional highway that begins at the junction of SR-113 in Knights Landing and extends northward through Yolo, Colusa, and Glenn Counties, across flat terrain parallel to the Sacramento River. Since SR-45 is a feeder route of economic importance for local farm-to-market traffic and is of minor importance to the State Highway System as a whole, no significant growth and development is anticipated in the rural areas served by SR-45. No specific discussion of freight/goods movement.
049	State of the Corridor Report (SOTC)	State of the Corridor Report: 2010 Report on the SR-49 Corridor System Management Plan	2010	No specific discussion of freight/goods movement.
049	Corridor System Management Plan (CSMP)	SR-49 Corridor System Management Plan	2009	Major connector for both automobile and truck traffic originating from the I-80 corridor in the Auburn area and the SR-49/20 corridor in the Grass Valley and Nevada City areas. Addresses how SR-49 is evolving into a critical goods movement corridor and how it’s a significant interregional connector for natural resource based product shipments and for travelers seeking tourist and recreational destinations.

Corridor	Corridor Study Type	Study Title	Year	Relevant Information
049	Transportation Concept Report (TCR)	SR-49 Transportation Concept Report	2000	Includes the portion of SR-49 between I-80 in Auburn and SR-20 in Grass Valley. Discusses the importance of SR-49 in freight movement.
050	State of the Corridor Report (SOTC)	State of the Corridor Report: 2010 Report on the US-50 Corridor System Management Plan	2010	No specific discussion of freight/goods movement.
050	Transportation Concept Report (TCR)	U.S. Highway 50 Transportation Concept Report	2010	Currently being updated in 2013. Begins at I-80 in West Sacramento and traverses portions of Yolo, Sacramento, and El Dorado Counties before passing into the State of Nevada. All 108 miles of US-50 in California lie in Caltrans District 3. No discussion of freight/goods movement.
050	Corridor System Management Plan (CSMP)	U.S. Highway 50 Corridor System Management Plan	2009	Currently being updated in 2013. Cross-country highway connecting Sacramento with the East Coast. The CSMP network includes US-50 from the US-50/I-80 interchange in the City of West Sacramento to the US-50/Cedar Grove exit in the El Dorado County community of Camino, as well as select parallel roads, transit services, and bike routes. No specific discussion of freight/goods movement.
51	Corridor System Management Plan (CSMP)	U.S. Highway 51 Corridor System Management Plan	2013	Currently being developed in 2013. Data tables available for this freight study.
065	State of the Corridor Report (SOTC)	State of the Corridor Report: 2010 Report on the SR-65 Corridor System Management Plan	2010	No specific discussion of freight/goods movement.

Corridor	Corridor Study Type	Study Title	Year	Relevant Information
065	Corridor System Management Plan (CSMP)	SR-65 Corridor System Management Plan	2009	Major connector for both automobile and truck traffic originating from the I-80 corridor (in the Roseville/ Rocklin area) and the SR-70/ 99 corridor (in the Marysville/ Yuba City area). SR-65 is a vital link from more affordable housing in Sutter and Yuba Counties to regional employment centers in Placer County and is also an important route for the transport of aggregate, lumber, and other commodities. Also discusses the issue of truck traffic in SR-65.
070	Transportation Corridor Concept Report (TCCR)	SR-70 Transportation Corridor Concept Report	2009	Primary north-south transportation corridor (in conjunction with SR-99) for the eastern Sacramento Valley. Addresses the Yuba River Parkway Project which will reduce truck traffic through Marysville and Hallwood by providing a more direct route for trucks to access Routes 65 and 70.
080	State of the Corridor Report (SOTC)	State of the Corridor Report: 2011 Report on the I-80 and Capital City Freeway Corridor System Management Plan	2011	I-80 and Capital City Freeway Corridors which include SR-51 and I 80 from SR-113 in Solano County to Horse Bar Road in Placer County. No specific discussion of freight/goods movement.
080	Transportation Corridor Concept Report (TCCR)	I-80 Transportation Corridor Concept Report	2010	Currently being updated in 2013. Primary transcontinental freeway serving passenger and goods movement between the San Francisco Bay Area, Northern California, ports and transshipment facilities, transcontinental highway networks, the Midwest, Canada, and the eastern United States. Addresses the issues that arise with freight/goods movement during the winter.
080	Corridor System Management Plan (CSMP)	I-80 and Capital City Freeway Corridor System Management Plan	2009	Currently being updated in 2013. Capital City Freeway corridors which include I-80 from SR-113 in Solano County to Sierra College boulevard in Placer County, the entirety of the Capitol City freeway, as well as select parallel and connecting roadways, transit services and bike routes. States that all of the cities and counties within the I-80 CSMP corridor have ordinances in place that designate truck routes and support goods movement.
084	Transportation Corridor Concept Report (TCCR)	SR-84 Transportation Corridor Concept Report	2012	Also called Jefferson Blvd., is a one-segment, two-lane conventional facility located in a rural-agricultural part of Yolo County that begins at the Solano/Yolo County Line (Caltrans District 3/District 4 boundary). Discusses the role of the Sacramento River in rail freight transportation.

Corridor	Corridor Study Type	Study Title	Year	Relevant Information
089	Transportation Corridor Concept Report (TCCR)	SR-89 Transportation Corridor Concept Report	2012	Mainly a two-lane highway, which runs 87 miles northward from the El Dorado-Alpine County line to the Sierra-Plumas County line. Traffic on SR-89 is a mixture of local and visitor vehicles traveling to residential sites, commercial establishments and recreational facilities, and varies considerably by the season. No specific discussion of freight/goods movement.
099	State of the Corridor Report (SOTC)	State of the Corridor Report: 2010 Report on the SR-99 North Corridor System Management Plan	2010	No specific discussion of freight/goods movement.
099	Transportation Corridor Concept Report (TCCR)	SR-99 Transportation Corridor Concept Report	2010	Primary north-south corridor for the 11 urbanized communities along its path. It passes through 13 counties in California's San Joaquin and Sacramento Valleys. Discusses the critical role SR-99 plays for interregional travel, goods movements, farm-to-market transport, and connectivity to other highways.
099	Corridor System Management Plan (CSMP)	SR-99 North Corridor System Management Plan	2009	Chico area which includes SR-99 from the intersection of Southgate avenue to the intersection of SR-99 and esplanade as well as select parallel roads, transit services and bike routes. No specific discussion of freight/goods movement.
104	Transportation Corridor Concept Report (TCCR)	SR-104 Transportation Corridor Concept Report	2012	Undivided two-lane conventional highway in Sacramento County from the City of Galt and SR-99, through the town of Herald, to the Amador County line. Agriculture and mining uses are present along the eastern portion of the route which generates truck traffic. According to the City of Galt 2030 General Plan, growth has primarily occurred in the northeast portion of the City where SR-104 serves as the northern boundary and provides major transportation access.
113	Transportation Corridor Concept Report (TCCR)	SR-113 Transportation Corridor Concept Report	2010	Route extends 38.3 miles from I-80, through the UC Davis campus, through the City of Davis, through the City of Woodland, to the SR-99/ SR-113 Junction, which is 10 miles south of the City of Yuba. SR-113 serves as an important crosslink in the State Highway System as agricultural and commercial traffic of regional significance use this route for travel to I-80 and I-5. No discussion of freight/goods movement.

Corridor	Corridor Study Type	Study Title	Year	Relevant Information
128	Transportation Corridor Concept Report (TCCR)	SR-128 Transportation Corridor Concept Report	2010	Two-lane conventional highway that connects the Napa Valley across the Coast Range, through the City of Winters, to I-505. SR-128 is expected to continue as a predominately rural highway, serving relatively low traffic volumes. No specific discussion of freight/goods movement.
149	Transportation Corridor Concept Report (TCCR)	SR-149 Transportation Corridor Concept Report	2011	Four-lane expressway that begins at SR-70 near Oroville and traverses north to SR-99, south of the city of Chico. No specific discussion of freight/goods movement.
153	Transportation Corridor Concept Report (TCCR)	SR-153 Transportation Corridor Concept Report	2011	Serves primarily recreational traffic near Coloma in El Dorado County. Caltrans may pursue relinquishment of this route as it does not serve as a major interregional travel route. No discussion of freight/goods movement.
160	Transportation Corridor Concept Report (TCCR)	SR-160 Transportation Corridor Concept Report	2010	Two-lane conventional facility, which enters District 3 via the Antioch Bridge (at the Sacramento/ Contra Costa County line) and traverses Sherman Island. Discusses freight/goods movement in the various segments of SR-160; addresses that SR-160 will experience increased traffic within the next 20 years.
162	Transportation Corridor Concept Report (TCCR)	SR-162 Transportation Corridor Concept Report	2011	Route extends across Glenn and Butte Counties providing a west-to-east connection between I-5, SR-45, SR-70, and SR-99. In District 3, SR-162 consists of unconstructed roadway that is maintained by Glenn County in the Mendocino National Forest from Glenn County line east to CR307. 2030 Butte County General Plan Circulation Element Policy supports the improvement of major travel corridors to I-5 for the movement of goods and people, and the enhancement of SR-162's link to I-5 through alignments and bridge improvements to facilitate larger trucks and vehicles.
174	Transportation Corridor Concept Report (TCCR)	SR-174 Transportation Corridor Concept Report	2010	Non-interregional route that extends 13.1 miles northward from I-80 near Colfax in Placer County to SR-20 in the City of Grass Valley in Nevada County. Increasing numbers of local and regional commuters are using SR-174 as a direct route between Auburn and Grass Valley or Nevada City to avoid congestion on SR-49. Large trucks and slow moving vehicles occasionally affect traffic flow.

Corridor	Corridor Study Type	Study Title	Year	Relevant Information
191	Transportation Corridor Concept Report (TCCR)	SR-191 Transportation Corridor Concept Report	2011	South to north undivided 2-lane highway in Butte County. It is the main road Paradise and Magalia residents depend on for access to the City of Oroville in the south, and beyond that the Cities of Marysville, Yuba City, and Sacramento. Used for local and regional trips rather than interregional travel. No discussion of freight/goods movement.
193	Transportation Corridor Concept Report (TCCR)	SR-193 Transportation Corridor Concept Report	2011	Route begins at the junction of SR-49 in Placerville and travels north, and then west, passing through Georgetown, and reconnecting with SR-49 in the town of Cool. No specific discussion of freight/goods movement.
244	Transportation Corridor Concept Report (TCCR)	SR-244 Transportation Corridor Concept Report	2012	1.8 mile west-to-east connector ramp located in Sacramento County between Auburn Boulevard and I-80 and SR-51 (Business Loop I-80). No specific discussion of freight/goods movement.
267	Transportation Corridor Concept Report (TCCR)	SR-267 Transportation Corridor Concept Report	2012	West to east undivided 2-lane mountain highway 11.7 miles in length that connects I-80 at Truckee (hub for rail freight and passenger service) in Nevada County (PM 0.0) to SR-28 at the North Shore of Lake Tahoe at Kings Beach in Placer County (PM 9.9). No specific discussion of freight/goods movement.
505	Transportation Corridor Concept Report (TCCR)	I-505 Transportation Corridor Concept Report	2011	Four-lane divided freeway that begins at the Yolo/Solano County Line and traverses north bordering the city of Winters, to I-5 south of Dunnigan. An approximately 22.3 mile portion of I-505 lies within District 3, while the remainder of the Interstate lies in Solano County (District 4). I-505 serves as a major link for interregional travel, commuter travel, and goods movement.

## **Other Goods Movement Planning Efforts**

Finally, the study team reviewed 33 additional planning efforts. Exhibit 8 summarizes key elements from these plans that may be relevant to the District 3 goods movement plan. The San Joaquin Interregional Freight Study was recently completed and may provide additional trends and insight to goods movement in District 3 since the two regions share significant truck traffic along the I-5 and SR-99 Corridor.

*Exhibit 8: List of Other Goods Movement Planning Efforts*

Plan Sponsor	Plan Title	Date	Relevant Information
Business, Transportation and Housing Agency/ California Environmental Protection Agency	Goods Movement Action Plan(GMAP)	1/1/2007	Discusses ways to improve and expand California's goods movement industry and infrastructure in a manner which will generate jobs, increase mobility and relieve traffic congestion, improve air quality and protect public health, enhance public and port safety, and improve California's quality of life. Central Valley rapid population growth and extensive agricultural production and processing create conflicts between passenger and freight movement, particularly along access arteries into the Bay Area and through the transportation system crossroads of Sacramento. I-5 serves as a vital gateway into the Central Valley, and SR 99, from south of Bakersfield to Sacramento, may be more important for goods movement. Port of Stockton (District 10) has strong potential for growth, although highway access is a significant concern. The Port of West Sacramento is smaller and hampered by inadequate water channel depth, changing area economics, and encroaching urbanization.
Caltrans	California Aviation System Plan (CASP)	2011	Several reports identifying airport capital needs in California.
	California Air Cargo Ground-Side Needs Study	7/24/2013	Assesses air cargo trends including for Sacramento International and Mather Field in Sacramento. Examines ground access issues to these airports. Reviewed Airport Master Plans and interviewed Sacramento International airport staff to discuss needs.
	California Freight Mobility Plan (CFMP)	2015	Successor to the GMAP scheduled to be completed by 2015 for incorporation into the California Transportation Plan (CTP). The CFMP will recommend a possible approach and timing for developing a vision of goods movement, development and updating of goals and policies, and identification of potential infrastructure improvement. Plan will consider regional differences and evaluate how to best obtain substantive input from stakeholders.
	California Interregional Blueprint Draft Interim Report	5/1/2012	Lays the groundwork for the 2015 CTP by summarizing regional efforts with respect to transportation-related greenhouse gas reduction and the potential influence of these regional efforts on the statewide transportation system. Report also describes the potential roles of Caltrans and other state agencies to integrate regional efforts and provide leadership on topics of statewide significance.
	California State Rail Plan – 2007-08 to 2017-18	3/1/2008	Provides a description of the freight rail network, issues concerning the industry, and policy recommendations and goals for the maintenance, preservation and improvement of the system.
Caltrans District 3	D3 Bridge Vertical Clearance List	4/16/2013	Microsoft Excel spreadsheet that reports bridge deficiencies including clearance restrictions. The spreadsheet also prioritizes the deficiencies and provides recommended actions.
	Develop a Reliable Planning-Level Methodology to Forecast Heavy Vehicle (Truck) Traffic Growth on State Highway Routes in the SACOG Region	3/1/2013	Provides a literature review of freight data sources for heavy duty truck modeling. Reviews the SACMET model. Provides truck counts at ten (10) locations around Sacramento.
	District System Management and Development Plan (DSMDP)	1/1/2013	Improvement needs are identified. The plan identifies policies, programs and projects needed to maintain, manage and enhance overall mobility, focusing on State Highway System (SHS). Provides high level guidance on how the District is approaching long term transportation needs in the region. The document is updated biennially.
	Transportation System Development Program	11/1/2011	Identifies the specific State Highway and major transit improvements needed to maintain regional mobility, decrease traffic congestion, and improve system wide connectivity in District 3.

Plan Sponsor	Plan Title	Date	Relevant Information
FHWA Research and Innovative Technology Administration (RITA)	NCFRP REPORT 14: Guidebook for Understanding Urban Goods Movement	2012	Addresses goods movement efficiency in urban areas stating its importance in the functioning of cities and that it should be an appropriate concern for the public agencies that manage goods movement. This report serves as a guideline to help public agencies address such responsibilities.
I-80 Coalition	I-80 Coalition Freight & Goods Movement Issues Overview: Freight Action And Coordination Plan		Provides an overview of freight/goods movement issues for the I-80 Coalition and documents what other states and coalitions are doing to involve the freight/goods movement industry as well as understand their needs.
	I-80 Livability Meeting Summary		Summarizes how transportation plays a role in a community's quality of life and how livability principles are relevant to the Nevada Department of Transportation (NDOT) and I-80 project.
	Vision, Goals, and Objectives		Discusses visions, goals and objectives of the I-80 Coalition and particularly how winter weather negatively impacts freight and goods movement on the I-80 and what steps have been taken to combat it.
	What is Livability?		Presentation on how transportation plays a role in a community's quality of life; discussion on how livability principles are relevant to the NDOT and I-80 project. No mention of freight/goods movement.
	I-80 Corridor System Master Plan: Joint Task Force Status Briefing:	3/12/2013	Empowering I-80 communities: providing working groups a forum for dialogue about corridor community topics with mobility implications. No mention of freight/goods movement.
Metropolitan Transportation Commission (MTC)	MTC Regional Airport System Plan	Jun-12	Updated in 2012, the plan expected to see international cargo volumes at San Francisco International grow by over 400 percent by 2020, while domestic cargos increased by 55 percent. Oakland International (OAK) and Mineta San Jose International were each expected to see 187 percent increases in air cargo tonnage. In fact, air cargo tonnage figures at Bay Area airports fell rapidly during the first part of the new century.
	MTC Regional Rail study	Sep-07	Can be used to estimate freight movement growth in region. The majority of freight rail traffic is expected to pass through the Union Pacific Central Corridor through Sacramento.
	Regional Goods Movement Study	Dec-04	Primarily focuses on Bay Area, but discusses warehousing expansion in Solano County adjacent to District 3. Thirty-seven percent of Bay Area economic output is in manufacturing, freight transportation, and the warehouse and distribution businesses. Development trends and regional growth forecasts indicate increased demand for goods movement services while at the same time a reduction in affordable, close-in location options for businesses.  More than 80 percent of the goods movement in the Bay Area involves trucking in several major corridors: I-880, I-580, and I-80, and US-101 South, with volumes descending in that order. These corridors are also some of the most congested commute corridors in the region. The study identifies I-880 as the most traveled highway by trucks in the Bay Area, while I-580 is considered the primary connection between the Bay Area and the national interstate truck network. The study forecasts that volumes of containerized cargo will grow at 5 percent per year through 2020. It noted that the key to improved future utilization of the Port of Oakland is to focus on the transportation facilities in and around the seaport: improving intermodal rail facilities, increasing logistics space, and improving connectivity between the marine and rail terminals.
Nevada DOT	I-80 Corridor System Master Plan	4/30/2012	Discusses the development of a comprehensive strategy for implementing coordinated planning and system development for the entire Corridor. States that the I-80 is a heavily used freight corridor and that potential ports, airports, heavy rail and high-speed ground transportation developments will likely have a large effect on traffic volume and operations along the Corridor.

Plan Sponsor	Plan Title	Date	Relevant Information
	I-80 Corridor System Master Plan NDOT Staff Kickoff Meeting	4/30/2012	Meeting that solicited individual concerns and perspectives with regard to the conduct of the I-80 corridor study. Goals for the I-80 Corridor System Master Plan included to investigate freight potential and transport/rail and to address bad weather truck parking.
	Sustaining Existing Corridors and Preserving Potential Corridors for NDOT's future: Planning Our Transportation Future Phase II	3/1/2012	Discusses NDOT's project on maintaining and sustaining corridors. The project result would be a long-range transportation plan to guide decisions and investments in the future along with established policies and guidelines for preserving corridors. States that project improvements include improving truck and rail freight.
Port of West Sacramento/ City of West Sacramento	Business Plan	Mar-13	The port faces financial constraints including declining volumes of cargo products (other than rice, which remains stable), overseas market shifts, competition from other ports, debt, and the need for a deeper channel to accommodate larger ships. The port aims to develop new cargo business and upgrading North Terminal facilities, certain cargo-related objectives persist. Recommendations are provided related to preserving the Port's base cargo, advancing the Marine Highway container barge service project, and maintaining the current depth of the Deep Water Ship Channel.
RCG Economics	I-80 Corridor Study: Economic-Base Analysis	10/22/12	I-80 Metropolitan Statistical Area (MSA) economies are each unique with different economic linkages; I-80 remains a major east-west goods movement corridor; Feasibility of truck-only lanes should be investigated
Sacramento Area Council of Governments (SACOG)	Innovations Survey Rural-Urban Connections Strategy (RUCS)	2009	Survey on innovations related to Rural-Urban Connections Strategy.
	Interregional Truck Operations and STAA Truck Route Improvement Study Consultant Recommendation	9/22/2011	Discusses truck operation issues and network discontinuities between the Sacramento and San Joaquin counties and how these issues negatively impact economic development and goods movement activities. Examines enhancements to the existing freight truck route planning process and ways to inform the community about the requirements for STAA truck routes. Goals of the study include: addressing STAA freight truck route planning process and issues to facilitate consistent processes for state and local requirements and regulations; and providing information about these freight truck route decisions to communities that may be impacted. In Sacramento and San Joaquin Counties, California Highway Patrol (CHP) has begun to issue citations when STAA vehicles are operated on routes that are not approved and signed. This action has called into question the approval procedure for such routes.
	MTP2035 Issue Papers: Freight Movement	10/1/2006	Discusses issues related to the movement of goods facing the Sacramento region over the next 25 years and attempts to answer questions about the movement of goods to, from, and within Sacramento, why we should be concerned about it, and what SACOG can/cannot do in the area.
	Rural Transportation Funding Handbook	9/1/2009	Provides information about funding sources for street, highway, transit, bike, and pedestrian type projects; airport and seaport projects are not addressed.
	Rural Transportation: Current Conditions RUCS Transportation Workshop	12/11/2008	Observes unique issues in rural areas in the SACOG region. Objectives include economic and environmental sustainability; engaging the region in a conversation; and, developing tools and strategies to help answer questions. Discusses goods movement in rural roads and rural trucking.
	Regional Goods Movement Study: Phase One Report	9/10/2006	Detailed report addressing goods movement activities in the six-county SACOG region including highway, railroad, marine, and air cargo transportation; assesses current conditions and provides a well-organized body of data and information on freight and goods movement in the SACOG region.
	Regional Goods Movement Study: Phase Two White Papers	1/10/2007	This study is an analytic exploration of problems, options and scenarios for the SACOG region. It provides an in-depth insight into the major goods movement issues identified in Phase 1.

Plan Sponsor	Plan Title	Date	Relevant Information
	Tying Sacramento and Northern California to the World's Infrastructure for the 21st Century	6/19/2007	Overview of the West Coast/ Northern California Air Cargo History, Market and Trends
San Joaquin Council of Governments (SJCOG)	CIRIS Implementation Plan	7/1/2006	Key findings: There exists a market for rail intermodal service to the Port of Oakland, primarily in the Stockton, Modesto, and Fresno areas, with sufficient volume so as to support daily train service; A rail intermodal service cannot compete head-on with trucking, and would require a permanent operating subsidy; The critical issue facing regional rail service in California is rail line capacity. Railroads would not be willing to discuss regional shuttle services without an overall public-private program to increase rail capacity; To implement a rail intermodal shuttle will therefore be a multi-step process requiring significant public sector initiative and funding. The California Inter-Regional Intermodal System (CIRIS) project has received a small amount of federal funding through the Port of Oakland and has been incorporated in the draft State Goods Movement Action Plan; The potential for Sacramento area participation in CIRIS is discussed in the report as an eventual long-term development; There is presently no intermodal rail terminal.
San Joaquin Valley Governments Regional Transportation Planning Agencies	San Joaquin Valley Interregional Goods Movement Plan	6/30/2103	Plan identifies a future preferred goods movement system for the Valley implemented through a comprehensive interregional strategy. Focuses on San Joaquin Valley, but discusses Port of West Sacramento. Issues identified by the project including infrastructure (insufficient roads or rail lines, bottlenecks and chokepoints, or dangerous/unsafe conditions); operational (focus on systems that manage or coordinate transportation system performance and on issues such as truck routing patterns, traffic control programs, and rail /highway grade crossings); and, institutional (focus on regulatory and governance issues, such as air quality/environmental regulations).
Shasta Regional Transportation Agency (SRTA)	North State Transportation for Economic Development Study (NSTEDS)	Jun-13	Discussion of planned transportation system enhancement for North State Counties including Butte, Colusa, Glenn, and Sierra Counties in District 3. The study reviewed current and future transportation system Level of Service, identification of projects to include in strategy testing, and a discussion of commodity productions and flows based on an analysis of FAF3.
U.S. DOT	M-580 Marine Highway Corridor Study	2010	U.S. DOT awarded a \$30 million Transportation Investment Generating Economic Recovery (TIGER) grant for the Ports of Stockton, Oakland and West Sacramento to develop the infrastructure to establish container-on-barge service between the from/to the Port of Oakland. The new service would take 350 containers per trip from the Valley to the Port of Oakland, reducing the number of drayage trucks. The goal of the service is to reduce the estimated 1,600 daily trucks that travel I-580 in and out of the Port of Oakland. Traffic is estimated to increase along with the projected future residential population adjacent to the port. The M-580 would serve as an overweight corridor, offering cost savings to exporters by allowing them to load containers to full capacity, thereby reducing the number of containers required in a specific shipment.

## Project Identification and Prioritization Methodologies

The study team reviewed statewide and regional efforts related to freight project prioritization methodologies and processes. These methodologies are reflective of decision-makers' needs for analytical tools to rank freight projects, guide regional priorities, and determine the best candidate projects for funding.

The projects summarized in this section will be further assessed in Task 3 (Methodology Development) to develop a detailed methodology recommendation for Caltrans to consider for the Goods Movement Study. Any prioritization methodology will be mindful of Caltrans mission ("Caltrans improves mobility across California") and the five strategic goals of the Department:

- Safety - Provide the safest transportation system in the nation for users and workers.
- Mobility - Maximize transportation system performance and accessibility.
- Delivery - Efficiently deliver quality transportation projects and services.
- Stewardship - Preserve and enhance California's resources and assets.
- Service - Promote quality service through an excellent workforce.

They will also be consistent with the seven MAP-21 National Freight Policy goals which include:

- Investing in infrastructure improvements and implementing operational improvements to the national freight network to enhance the economic competitiveness of the United States, reduce congestion; and increase productivity particularly to create high-valued jobs in domestic industries and businesses;
- Improving the safety, security, and resilience of freight transportation;
- Improving the state of good repair of the national freight network;
- Using advanced technology to improve the safety and efficiency of the national freight network;
- Incorporating concepts of performance, innovation, competition, and accountability into the operation and maintenance of the national freight network;
- Improving the economic efficiency of the national freight network; and
- Reducing the environmental impacts of freight movement on the national freight network.

A project prioritization methodology for freight infrastructure projects is most commonly used to identify projects with the greatest public benefit. This approach consists of ranking or scoring proposed projects from high to low priority based on a variety of preset evaluation criteria and local constraints (e.g., mobility; regional economic development; community support; improved system performance and efficiency; safety; project readiness; and environmental benefits). Best practices include economic analysis and comparing benefit-cost ratios of projects to determine its order of rank and priority. Public-private partnership can also help transportation agencies conduct outreach and coordinate with a variety of stakeholders and identify priority freight projects.

Exhibit 9 below summarizes the evaluation methodologies reviewed as part of this literature review. The exhibit is followed by a brief discussion of each methodology reviewed by the study team. The factors used to evaluate projects are grouped into the 13 general categories shown in Exhibit 9. These factors were commonly identified in studies, and many of them represent focus areas in California and at the federal level.

As specified in the Request for Offers (RFO), the District 3 Goods Movement Plan will identify up to seven prioritization metrics to use in this evaluation effort. The study team will propose metrics to Caltrans District 3 as part of Task 3 and will revise those based on input from the District. The 13 general categories are summarized below:

- *Mobility/Reliability* – This evaluation grouping attempts to evaluate projects based on their anticipated impact on congestion or travel time reliability. Caltrans mission is to improve mobility across California, and MAP-21 places a priority on mitigating bottlenecks on the national freight network that create significant freight congestion problems. Methodologies that used congestion reduction or travel time improvements as a factor were grouped in this category.
- *Accessibility/Intermodal Connectivity* – An element of the Caltrans strategic goals is to maximize transportation system accessibility. The MAP-21 National Freight Strategic Plan also addresses strategies to improve freight intermodal connectivity. Other efforts in California also emphasize local “last mile” connectors. A study that examined multimodal connectivity or accessibility to freight origins or destinations was placed into this category.
- *Safety & Security* – One of the Caltrans strategic goals and another MAP-21 focus area is safety and security. If a study used a traffic safety or homeland security factor in the analysis, then it was classified as using this grouping.
- *System Preservation* – A major issue identified by stakeholders at recent outreach efforts for this study is pavement quality. Other state efforts and MAP-21 also place a special focus on maintaining a state of good repair on roads and bridges. Studies using pavement or bridge rehabilitation or maintenance as a priority were included in this category.
- *Implementability* – One of Caltrans’ strategic goals has is to efficiently deliver quality transportation projects and services. This broad grouping addresses that goal by identifying studies that included some element of ease of implementation as a factor. Such factors may include funding availability, timeliness, and constructability. This criteria may be useful to identify eligible projects for MAP-21. Caltrans is currently considering adding a criteria to identify if a project has gone through environmental review and whether it is listed in an TRP/MTP.
- *Cost Effectiveness* – This is a commonly used criterion for evaluating projects. A project is cost effective if its benefits are greater than its costs. This is similar to the “Benefit-Cost” metric defined below. However, this metric was distinguished from benefit-cost because that metric describes a specific analytical technique for evaluating projects.

- *Partnerships* – One of the stated goals of the District 3 Goods Movement Study is to improve coordination among regional partners in the district. If a methodology described a criterion that addressed regional are public-private partnerships, it was included in this category.
- *Benefit-Cost (B/C)* – A benefit/cost is a systematic process for calculating and comparing benefits and costs of a project. Being categorized in this grouping meant that a study described an approach that used b/c analysis techniques to evaluate the cost effectiveness of projects.
- *Economic Development Potential* – MAP-21 places an emphasis on freight infrastructure investments that develop domestic industries. If a methodology used a metric such as Gross Domestic or Regional Product (GDP or GRP) employment impacts, or other economic development criterion, then that study was included in this grouping.
- *Community and Local Support* – Similar to the partnerships metric, if a study evaluated projects based on a measure of local support such as being included in a regional plan, then that methodology was included in this grouping.
- *Environment* – Environmental metrics are major considerations in developing transportation projects. Stewardship is one of Caltrans strategic goals and air quality conformity is a major issue in the Sacramento area. If a methodology used a quantitative or qualitative assessment of environmental impacts (e.g., air quality, noise, water pollution, etc.) then that methodology was included in this grouping
- *Land Use* – In the Senate Bill 375 era where land use considerations take a larger role in transportation planning, this metric may be an important evaluation criterion to consider. It typically is evaluated by assessing if a project is consistent with regional land use plans.
- *Other* – Any methodology criterion that did not fit into one or more of the other categories was placed in to the “other” category. For example, a project that is considered a “special project” would be placed in this category.

*Exhibit 9: Prioritization and Evaluation Methodology Summary Matrix*

Agency/Location	Mobility/Reliability (Congestion, Travel Time)	Accessibility/Intermodal Connectivity	Safety & Security	System Preservation	Implementability (Funding, Timeliness, Constructability)	Cost Effectiveness	Partnerships	Benefit-Cost	Economic Development Potential (GDP, employment)	Community and Local Support	Environment (Air Quality, Noise, Water Pollution)	Land Use (consistency with regional plans)	Other
Anchorage Metropolitan Area Transportation Solutions (AMATS)	✓	✓	✓	✓		✓		✓	✓	✓	✓	✓	✓
Atlanta Regional Commission (ARC)	✓	✓	✓					✓		✓	✓		
Boston Metropolitan Planning Organization	✓	✓	✓		✓	✓	✓		✓	✓	✓	✓	
City of Everett, WA; Port of Everett, WA; and, City of Marysville, WA	✓		✓		✓	✓	✓	✓	✓	✓	✓	✓	
Florida Department of Transportation	✓		✓		✓		✓	✓		✓	✓		
Fredericksburg Area Metropolitan Planning Organization (FAMPO)	✓	✓	✓		✓		✓			✓	✓		
Hampton Roads Transportation Planning Organization (HRTPO)									✓				
Indiana Department of Transportation (INDOT)		✓						✓	✓				
King County, Washington	✓		✓	✓									
Louisiana Department of Transportation and Development	✓		✓	✓	✓			✓	✓		✓		✓
Maine Department of Transportation	✓	✓				✓	✓		✓		✓		
Maryland Statewide Rail Plan	✓	✓	✓	✓							✓		
Massachusetts Department of Transportation	✓	✓	✓	✓	✓		✓		✓	✓	✓		
Metro (Portland region, Oregon)	✓	✓	✓						✓				
Michigan Department of Transportation								✓	✓				

Agency/Location	Mobility/Reliability (Congestion, Travel Time)	Accessibility/Intermodal Connectivity	Safety & Security	System Preservation	Implementability (Funding, Timeliness, Constructability)	Cost Effectiveness	Partnerships	Benefit-Cost	Economic Development Potential (GDP, employment)	Community and Local Support	Environment (Air Quality, Noise, Water Pollution)	Land Use (consistency with regional plans)	Other
Mid-Ohio Regional Planning Commission (MORPC)	✓						✓						
Missouri Department of Transportation	✓	✓	✓	✓					✓		✓		
Montana Department of Transportation													
Ohio Department of Transportation	✓	✓	✓		✓				✓				
South Florida Regional Freight Plan	✓	✓			✓			✓		✓			
Texas Department of Transportation	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓		
Washington State Department of Transportation	✓		✓	✓		✓		✓	✓		✓		
Wisconsin Department of Transportation	✓	✓	✓						✓	✓	✓	✓	

## Anchorage Metropolitan Area Transportation Solutions (AMATS)

The AMATS is a federally recognized Metropolitan Planning Organization (MPO) that plans and funds the transportation system in the Anchorage Bowl and Chugiak-Eagle River area when federal funds are being used. Given the importance of freight mobility, the AMATS Freight Advisory Committee (FAC) carried out a research study (2010) that identified and ranked the freight movement problems areas in the Anchorage region. The AMATS Area considered the categories of impacts and impact types noted in the table below when prioritizing freight projects.<sup>4, 5</sup>

Categories of Impact	Impact Types
Technical	Facility condition Travel time Vehicle operating cost Accessibility, mobility, and congestion Safety Intermodal movement efficiency Land-use patterns Risk and vulnerability
Environmental	Air quality Water resources Noise Wetlands and ecology Aesthetics
Economic efficiency	Initial costs Life-cycle costs and benefits Benefit-cost ratio Net present value
Economic development	Employment Number of business establishments Gross domestic product Regional economy International trade
Legal	Tort liability exposure
Socio-cultural	Quality of life

AMATS also used a Direct Weighting Method to prioritize projects. This ranking model assigns numerical weight values (subjective or objective) directly to performance criteria. For subjective data, the percentage of respondents that perceived an impact category was used. For objective data, crash data and traffic volume were used. Essentially, the model provides flexibility to the prioritization using one subjective criterion and two objective criteria, depending on the preference of the decision maker.

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<sup>4</sup> Prioritization of Future Freight Infrastructure Projects within the Anchorage Metropolitan Area Transportation Solutions (AMATS). Prepared for AMATS Freight Advisory Committee (FAC). April 23, 2010.

<sup>5</sup> Prioritizing Future Freight Infrastructure Projects within the AMATS Area PPT

### Atlanta Regional Commission (ARC)

The ARC is the regional planning and intergovernmental coordination agency for the greater Atlanta, Georgia, metropolitan region. ARC focuses its leadership, attention and resources on key issues of regional consequence. In addition, ARC is developing criteria to rank Transportation Improvement Program (TIP) projects and may use Federal Highway Administration's (FHWA) freight cost-benefit methodology. ARC has also explored using the Georgia Department of Transportation (GDOT) methodology for prioritizing improvements for at-grade rail crossings.

ARC essentially compares the composite score of projects to determine its order of rank and priority. The project prioritization methodology consists of the following:

- Adding numerical scores for all evaluation criteria to determine a composite score for each project
- Calculate mean and standard deviation of this distribution of average scores
- Convert average scores to a score of low, medium, or high (i.e., 1,2, or 3) using the mean and standard deviation of the distribution of average scores
- Prioritize projects
  - High score: any project with an average score higher than one standard deviation above the mean
  - Medium score: any project with an average score one standard deviation above and below the mean
  - Low score: any project with a score lower than one standard deviation below the mean

The project prioritization is based on the following criteria and measures:<sup>6</sup>

- Active Projects with Financial Commitment
- Regional Development Plan Policy Support
- Connectivity among Centers
- Congestion Relief (benefit/cost ratio for each project is determined exclusively for the congestion relief criterion only)
- Safety Improvement
- Environmental Considerations
- Regional Equity
- Cost Effectiveness

### Boston Metropolitan Planning Organization (MPO)

The Boston MPO uses TIP project evaluation [criteria](#) established by the MPO, which include, to maintain a state of good repair, focus investments on existing activity centers, improve mobility for people and freight, reduce the level of greenhouse gas (GHG) emissions, minimize environmental burdens from transportation facilities on low-income and minority populations, and provide safe transportation for all modes. Projects with components and outcomes that help attain the goals of the MPO receive higher scores. The project evaluation criteria consist of [35](#) questions across six policy categories.

### City of Everett, Port of Everett and City of Marysville (in Washington)

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<sup>6</sup> States' Approaches to Transportation Project Prioritization: Linking Policy, Planning and Programming

The City of Everett, Port of Everett, and City of Marysville evaluated and ranked eligible freight mobility projects by using the following screening criteria and scoring method. The criteria were based on the funding application scoring measures of the Washington State Freight Mobility Strategic Investment Board (FMSIB).<sup>7</sup> Projects with the highest level of non-FMSIB funding, as well as those with private-sector participation, were given priority ranking. Crucially, the FMSIB's position as an independent state agency with funding authority means it can implement freight projects without competing with other transportation priorities (although all projects must still be part of a state or regional transportation plan).<sup>8</sup>

Screening Criteria	Total Possible FMSIB Score
Freight mobility for project area	35
Freight mobility for region, state, nation	35
General mobility	25
Safety	20
Freight and economic value	15
Environment	10
Partnership	25
Consistency with regional plans	5
Cost effectiveness score	10
Special issues	8
Total possible points	188

Once the projects were selected and evaluated, they were ranked based on constructability and cost-benefit and stakeholder support. After ranking the projects, they were prioritized for future implementation into three timeframes, as follows:

- Short range (0-10 years)
- Mid-range (11 to 20 years)
- Long-range (21 to 30 years)

The prioritization of projects within these three periods is based on an equal rating of constructability, cost-benefit, and stakeholder support. Thirty-five points were available for each of these three categories, allowing a total available score of 105 points. In general, the projects that scored 50% or better of the total available points (105) were selected for the short-term financial plan (0 to 10 years). The remaining projects were assigned to the mid-range plan (11 to 20 years) and the long-range plan (21 to 30 years) based on scoring and input from the partner agencies.

When rating the constructability (timeliness) of a project, the following issues were evaluated:

- Engineering plans development
- Right of way acquisition costs and potential issues
- Potential impacts to critical areas
- Complexity of the design and permitting requirements

<sup>7</sup> Everett Freight Access & Mobility Study, July 2009

<sup>8</sup> exisitingpotentialmemo.pdf

The cost benefit of each project was calculated per the FMSIB equation to determine the number of freight hours of delay saved per million dollars of project cost. The stakeholder support value was derived from the results of the stakeholder surveys.

#### Florida Department of Transportation (Florida DOT)

The Florida Freight Stakeholders Task Force was formed as a result of the Governor's Intermodal Transportation Summit held on June 18, 1998 in Jacksonville. The Task Force was to be a private/public partnership that would address the needs of Florida's intermodal freight transportation. The Task Force was organized into five subcommittees on August 6, 1998, at a meeting in Tallahassee sponsored by the Florida DOT. The subcommittee chairs formed an Executive Committee to manage the work of the Task Force. In addition, the Task Force agreed to limit the scope of its work to freight intermodal transportation issues and not passenger transportation issues. The Task Force used a scoring system that identified, prioritized and recommended freight transportation projects for fast-track funding. They took into account the following criteria:<sup>9</sup>

- Benefit to cost ratio
- Stage of development /environmental compliance
- Time to complete project
- Current level of service (LOS)
- Actual/critical safety rating
- Neighborhood impacts of the project
- Current freight volume

However, before prioritization evaluation, projects had to be considered for eligibility. Projects had to:

- Be located on the Strategic Freight Network;
- Facilitate freight movement; and,
- Have a public benefit to cost ratio greater than one.

#### Fredericksburg Area Metropolitan Planning Organization (FAMPO)<sup>10</sup>

The FAMPO recommended a project prioritization methodology, based on the collective experience of other MPOs and localities, the eight Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) Federal Planning Factors, and the FAMPO Mission Statement. SAFETEA-LU authorized the Federal surface transportation programs for highways, highway safety, and transit for the 5-year period 2005-2009. It covered a variety of transportation related issues including financing, congestion relief, improved safety, improved efficiency (such as coordinated planning and environmental streamlining), environmental stewardship, and transportation related research and studies. This proposed recommended methodology uses readily accessible information in evaluating projects based on the following major factors and project classifications:

- Congestion relief: 30 points
- Safety and security: 30 points
- Environmental impacts: 16 points
- Public and community support: 8 points

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<sup>9</sup> Florida Freight Stakeholders Task Force Exec Summ.pdf

<sup>10</sup> Fredericksburg Area Metropolitan Planning Organization. Appendix F of 2040 Long Range Transportation Plan Draft. Highway Project Prioritization Methodology: Recommended Approach.

- Funding and implementation considerations: 8 points
- Smart growth/mobility: 8 points

These factors are consistent with FAMPO's mission, build on the relevant factors used in other areas for project prioritization, and fulfill each of the eight Federal Planning Factors. By evaluating projects based on factors within these major categories, projects are scored on a 100 point scale. Projects with the highest score are technically identified as higher priorities than those earning lower scores.

#### Hampton Roads Transportation Planning Organization (HRTPO)

The HRTPO has developed a tool that serves to prioritize candidate transportation projects based on their technical merits and benefits. The Freight Technical Advisory Committee (FTAC) has previously expressed support for the concept of the prioritization tool, along with improvement suggestions throughout the development process. Key to that support was the FTAC's recommendation that objective methodologies are used to prioritize projects. HRTPO published an updated draft of the Hampton Roads Prioritization of Transportation Projects "Evaluation and Scoring," dated December 2010. The draft outputs now provide one score for each project. The highest possible score is 300. The score was arrived at by totaling the individual scores each project receives for project utility, viability and economic vitality. Projects are ranked based on those scores within the following project categories:<sup>11</sup>

- Highways
  - Interstate
  - Primary
  - Secondary
  - Urban
- Bridge and Tunnel
  - Interstate
  - Primary
- Multimodal Passenger
- Intermodal
- Interchange
- Transit

#### Indiana Department of Transportation (INDOT) – MCIBAS<sup>1213</sup>

INDOT uses the Major Corridor Investment-Benefit Analysis System (MCIBAS) tool which assesses the relative costs and benefits of proposed major transportation corridor improvements. It consists of a traffic impact simulation model, a user benefit-cost analysis processor and an integrated economic impact analysis system. The MCIBAS uses the statewide or a regional travel demand model to measure the direct impacts of a major highway system improvement on existing and future traffic volumes, speeds, and distances. In addition, the MCIBAS considers the economic benefits from the expansion of existing businesses resulting from the improved transportation system (increased accessibility for a larger market area and increased speeds, lowering the cost of delivering goods and services) and the attraction of new businesses due to the higher transportation accessibility and lower business costs

<sup>11</sup> Hampton Roads TPO

<sup>12</sup> [http://www.in.gov/indot/files/02\\_planning\\_process.pdf](http://www.in.gov/indot/files/02_planning_process.pdf)

<sup>13</sup> INDIANA'S FUTURE TRANSPORTATION NEEDS REPORT

derived from an improved transportation system. Essentially, this tool is being used for all major capacity-adding projects for project prioritization.

The Major Moves Program is another unique tool in Indiana that uses a weighted, data-driven scoring formula to prioritize projects into a program. This program is sub-divided into Major New Construction and Major Pavement Preservation. Projects in the program are re-evaluated annually and prioritized based on up-to-date traffic, safety, mobility, and economic development information and trends. Projects can be accelerated, delayed, or the scope of work can be modified to better meet projected needs and fiscal requirements. In the development and continuing refinement of the Major Moves Program, economic development is a significant factor in project identification and prioritization.

### King County Washington

As with the adopted Policy Framework for the Puget Sound Regional Council's (PSRC) Project Selection Process, the King County Project Evaluation Committee (KCPEC) uses a scoring system as a tool to help determine which projects to recommend for funding. After projects are categorized into types, the Smaller Jurisdiction, Larger Jurisdiction, All Other Agency, Rural Area and Preservation Programs, the following evaluation criteria are used for scoring:<sup>14</sup>

- Designated Centers
  - Center development
  - Project's benefit to the center
  - Circulation within the center
- Manufacturing/Industrial Centers
  - Development and users benefit
  - Mobility and accessibility benefit
- Corridors Serving Centers
  - Benefit to regional growth or manufacturing/industrial center
  - System continuity/long-term benefit and sustainability

The objective is to review and rate similar types of projects. Projects are compared to one another in order to determine the magnitude of the improvement/impacts and to arrive at a final score. Projects that most directly support each criterion are rated "high."

Under the mobility and accessibility benefit, projects with a high, medium, or low score would have the following characteristics. High scoring projects would include:

- Improvements that streamline the efficient movement of freight and goods through a significant reduction in travel time, along with increased safety (such as providing an essential link or removing a barrier);
- Investments that improve the mode share of travel by providing alternatives to driving alone, such as transit and ridesharing; and,
- Investments that benefit a large number and variety of users, including those identified in the President's Order for Environmental Justice and/or areas experiencing high levels of unemployment or chronic underemployment.

Medium-scoring projects would include:

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<sup>14</sup> Mar 30 Section IV Countywide Project Evaluation Criteria - 2012.doc

- Improvements that streamline the efficient movement of freights and goods through a modest reduction in travel time, along with increased safety (such as providing an essential link or removing a barrier);
- Investments that modestly improve the mode share of travel by providing alternatives to driving alone, such as transit and ridesharing; and,
- Investments that benefit a modest number and variety of users.

Low-scoring projects would include:

- Improvements that provide a limited reduction in travel time;
- Investments that provide a limited improvement to the mode share of travel by providing alternatives to driving alone; and,
- Investments that benefit a limited number and variety of users.

#### Louisiana Department of Transportation and Development (LA DOTD)<sup>15</sup>

The LA DOTD uses a priority rating system, titled the Louisiana Freight Rail Project Evaluation Methodology, to identify and prioritize rail projects in five categories:

- Economic benefit to the state;
- Non-economic benefit to the community (including safety, congestion mitigation, noise and vibration reduction);
- Project type;
- Facility usage by number of railcars per year; and,
- Bonus points (including federally supported project, sponsor funding in excess of requirements, designated as special project, passenger rail impact, and phased project)

#### Maine Department of Transportation (MaineDOT)

MaineDOT's primary freight programming mechanism is the MaineDOT Industrial Rail Access Program (IRAP), which is designed to encourage economic development and increased use of freight rail throughout the state. The program provides state funding for freight rail projects, covering up to 50 percent of the total cost (the other 50 percent must be covered by the private sector). This funding is primarily derived from state bond funds; other sources have included Congestion Mitigation and Air Quality (CMAQ), Section 130, or FRA funding. The amount of funding available for IRAP varies from year to year and obtaining funding is a competitive process.

To prioritize IRAP projects for funding, MaineDOT uses ten (10) criteria. Projects are assessed on the basis of their support of:

- Job creation/retention;
- New investments;
- Intermodal efficiencies;
- Private share of project cost (the greater the share, the higher the rank);
- Anticipated decrease in air emissions and highway congestion;
- Transportation and logistics cost savings; and,
- Improvements in rail service.

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<sup>15</sup> Louisiana Department of Transportation and Development. Louisiana Statewide Rail Infrastructure Improvement Program Priority Process: Rules and Procedures. December 2008.

IRAP staff is very involved throughout the entire IRAP project lifecycle (e.g., staff conduct surveys after the project is completed to assess how businesses are using the improvements).

#### Maryland Statewide Rail Plan

The Maryland Statewide Rail Plan used the following criteria to evaluate rail projects.<sup>16</sup>

Criteria	Weighting	Description
Quality of service	25%	Potential for the project to reduce delay and increase reliability
Safety and security	20%	Potential for the project to lower truck-auto crash exposure and/or to protect the public from terrorist events
System preservation and performance	25%	Potential for the project to preserve existing assets and maximize the efficient use of resources and infrastructure
Environmental stewardship	10%	Potential for the project to reduce air and water pollution and encourage better coordination of transportation and land use
Connectivity for freight or passenger mobility	20%	Potential for the project to enhance connectivity between freight modes and/or improve access to clusters of freight-intensive industries; or for passenger projects the ability to enhance connectivity between modes and improve access to activity centers

#### Massachusetts Department of Transportation

The Massachusetts State Freight and Rail Plan<sup>17</sup> developed a comprehensive set of performance measures and evaluation criteria to help the state prioritize freight system infrastructure improvements and policy strategies. Prioritization of projects is primarily based on quantitative evaluation criteria and cost-benefit analysis. Evaluation criteria allow comparison across transportation modes by linking freight goals, objectives, and performance measures. Key criteria include:

- Congestion reduction and improved transportation system operations
- Operational costs
- “Last mile” connections to intermodal, seaport, and airport facilities
- Economic development and land use benefits (e.g., jobs and supporting smart growth)
- Environmental considerations, including emissions
- Local support and consistency with transportation plans
- Safety and security
- Partnership and linkage to regional initiatives
- Availability of funding from federal, local, and private sources

#### Metro (Portland region, Oregon)

As the MPO for the Portland region, Metro is authorized by Congress and the State of Oregon to coordinate and plan investments in the transportation system for the three-county area. Metro’s primary programming document is the Metropolitan TIP (MTIP). The MTIP includes \$24 million in

<sup>16</sup> Maryland Statewide Rail Plan PPT

<sup>17</sup> Massachusetts Department of Transportation Freight Plan. September 2010.

regional flexible funding allocated through a regional solicitation process. Five (5) million dollars of this amount is dedicated to projects that support freight and the green economy.<sup>18</sup>

Freight projects have not yet been methodically prioritized or assessed for inclusion in Metro's MTIP. Local jurisdictions provide freight projects to Metro, which includes them in the MTIP. In the future, Metro might develop freight criteria to help prioritize MTIP projects. Potential criteria might include:

- Reduction of freight vehicle delay;
- Improvement of access to industrial lands, employment centers/local business, and rail facilities for regional shippers;
- Safety improvements; and/or
- Improvement of freight reliability.

As part of the goal to maximize strategic transportation investment, the following freight-oriented preservation, management and investment priorities would be focused on:<sup>19</sup>

- more carefully evaluating what, where, and when the freight problems occur
- addressing core throughway system bottlenecks with substantial freight impacts, to improve truck mobility
- improving and protecting the throughway interchanges that provide access to major industrial areas
- improving arterial connections to current and emerging industrial areas
- ensuring safe transport of hazardous loads with a regional routing strategy
- looking beyond the roadway network to address critical marine and freight rail transportation needs

#### Michigan DOT – MI BEST<sup>20</sup>

The MI BEST Tool was developed for MDOT and calculates the inputs for the Regional Economic Models, Inc. (REMI) model for simulating the total economic impacts for the investment. The MI BEST Tool takes the VMT and Vehicle Hours Traveled (VHT) information, along with defined investment and funding costs, as inputs. The MI BEST Tool calculations include (1) conversion of impact of investment on traffic data to direct user benefits and translation of those impacts into REMI policy variables, (2) estimation of investment cost by category of spending and translation of those costs into REMI policy variables, and (3) estimation of investment funding by new revenue source and translation of those revenue sources into REMI policy variables if required. This process ultimately compares the output data of the MI BEST Tool as it reflects the results of a match all federal-aid Highway Program versus a reduced Highway Program by estimating the economic impacts associated with investment in various transportation programs over the defined years of the program.

#### Mid-Ohio Regional Planning Commission (MORPC)

MORPC is the MPO for the Central Ohio region, including the City of Columbus. MORPC developed a freight transportation improvement program (FTIP) to elevate the importance of freight to central Ohio and show projects that have clear impacts on goods movement. In addition, MORPC used information

<sup>18</sup> Best Practices in Freight Planning, Programming, and Stakeholder Engagement: Case Studies from Eight Freight Peers

<sup>19</sup> regional\_freight\_plan\_june\_10.pdf

<sup>20</sup> [http://www.michigan.gov/documents/mdot/MDOT\\_economicbenefitreport\\_202828\\_7.pdf](http://www.michigan.gov/documents/mdot/MDOT_economicbenefitreport_202828_7.pdf)

from online sources (e.g., [www.traffic.com](http://www.traffic.com)) to conduct low-cost analysis on truck speeds. This information may be used to develop performance measures in the future.

MORPC has also worked with a major shipper in its region to demonstrate how much congestion was costing the shipping company on an annual basis. Overall, the agency believes there is significant value in using data to “sell” improvement projects and show the private sector where important freight corridors are located.

#### Montana DOT – PECAS <sup>21</sup>

PECAS stands for Production, Exchange, and Consumption Allocation System. Overall, it uses an aggregate, equilibrium structure with separate flows of exchanges (including goods, services, labor and space) going from production to consumption based on variable technical coefficients and market clearing with exchange prices. It provides an integrated representation of spatially distinct markets for the full range of exchanges, with the transport system and the development of space represented in more detail with specific treatments. Flows of exchanges from production to exchange zones and from exchange zones to consumption are allocated using nested logic models according to exchange prices and transport generalized costs (expressed as transport utilities with negative signs). Exchange prices determined for space inform the calculation of changes in space thereby simulating developer actions. Developer actions are represented at either (a) the level of individual land parcels or grid cells using a micro simulation treatment or (b) the level of land use zones using an aggregate flow treatment.

#### Missouri Department of Transportation (MoDOT) <sup>22</sup>

Before project prioritization, MoDOT prioritizes needs based on transportation investment goals, physical system condition needs, and functional needs of the system. Using the criteria and goals listed below, MoDOT calculates the total score or weights for each measure. MoDOT works with planning partners to determine ratings for subjective factors.

- Access to Opportunity
  - Eliminate bike/pedestrian barriers (ADA)
  - Vehicle ownership
- Congestion Relief
  - Level of service and AADT
  - System efficiency
- Economic Competitiveness
  - Strategic economic corridor
  - Level of economic distress
  - Regional economic development plans
- Efficient Movement of Freight
  - Truck volume
  - Freight bottlenecks
- Quality of Communities
  - Complies with local/regional land use plans
  - Connectivity
- Environmental Protection
  - Environmental index

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<sup>21</sup> <http://www.hbaspecto.com/pecas/>

<sup>22</sup> States’ Approaches to Transportation Project Prioritization: Linking Policy, Planning and Programming

- Safety
  - Safety index
  - Accident severity
  - Accident rate
  - Safety concern
  - Safety enhancements
- Taking Care of the System (Roadway/Bridge)

#### Ohio Department of Transportation (ODOT)

ODOT prioritizes projects to determine the best candidates for funding by conducting technical analyses for transportation scores and economic development scores. ODOT places projects into one of three priority categories

- High Priority: recommended for construction during the upcoming six-year construction period;
- Medium Priority: funded for additional environmental, design or right of way development activities necessary before the projects would be available for construction; and,
- Low Priority: not recommended for further development due to lack of funding, low scores, excessive costs, etc.

The following criteria and measures are used for project prioritization by ODOT:

- Transportation Efficiency
  - Average daily traffic
  - Volume to capacity ratio
  - Roadway classification
  - Macro corridor completion
  - City/community size
- Safety
  - Accident rate
- Economic Development
  - Job creation
  - Job retention
  - Economic distress
  - Cost effectiveness of investment
  - Level of investment
- Funding
  - Public/private/local participation
- Intermodal Connectivity
  - Unique multi-modal impacts
- Urban Revitalization
  - Access to underdeveloped property

## South Florida Regional Freight Plan (SFRFP)

As part of the South Florida Regional Freight Plan (SFRFP), project prioritization methodologies were developed and/or recommended for each mode (roadway, seaport, railroad, and airport) to focus on regional needs. The specific approach used for each mode is summarized below.<sup>23</sup>

- *Roadway Project Prioritization*

The roadway project prioritization methodology was developed based on five elements. The five elements total point allocation is summarized below:

- Truck Traffic (40 total points)
- Truck Activity Centers (25 total points)
- Type of Project (15 total points)
- Facility Type (10 total points)
- Intermodal Connectivity (10 total points)

- *Seaport Project Prioritization*

Each seaport is responsible for developing an improvement program and setting investment priorities based on business opportunities. While individual county or facility priorities may differ, the priorities presented below represent regional priorities. The SFRFP used the following criteria to evaluate the projects.

- Type of Project (25 total points)
- Type of Traffic (10 total points)
- Public Funding (10 total points)
- Benefit-Cost Analysis of Seaport Framework (15 total points)
- Intermodal Connectivity (25 total points)
- Implementation Timeframe (15 total points)

- *Rail Project Prioritization*

The Florida Department of Transportation (FDOT) has used the Florida Freight Rail Investment Calculator to measure the benefits of state investments in the rail system. This methodology currently is being enhanced as part of the Rail System Plan Update. It will be used in the FDOT short and long term planning and programming process to support the Strategic Intermodal System cost-feasible plans, decisions regarding rail program funding allocations in the Program and Resource Plan, specific project funding decisions in the five-year work program, and more general rail investment guidelines through 2035. In addition to this state level project evaluation tool, as part of the SFRFP, the following project prioritization process was developed to guide regional priorities.

- Type of Project (25 total points)
- Type of Traffic (15 total points)
- Public Funding (15 total points)
- Intermodal Connectivity (25 total points)
- Implementation Timeframe (20 total points)

- *Airport Project Prioritization*

FDOT currently is considering the possibility of developing an investment evaluation tool similar to those developed for seaport and rail investments to help evaluate the benefits of airport

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<sup>23</sup> SEFL Freight prioritization.pdf

projects requesting state funding. The SFRFP should incorporate any such tool, as appropriate, as part of future updates. As part of the SFRFP, the following project prioritization process was developed to guide regional priorities.

- Type of Project (30 total points)
- Type of Traffic (30 total points)
- Included in State Work Program (20 total points)
- Implementation Timeframe (20 total points)

#### Texas Department of Transportation (TxDOT)

Research Project 0-6467, conducted by The Texas Transportation Institute (TTI) under contract with TxDOT, developed a system of evaluative tools to allow TxDOT to prioritize its investments in rail-related projects on a statewide basis. The goal of the project was to recommend a transparent methodology for evaluating proposed rail projects and establish a process through which the methodology could be applied periodically to re-evaluate rail-related investments and compare them against one another in order to determine the most appropriate manner in which to utilize available public funds for freight and passenger rail projects.<sup>24</sup>

Eleven evaluation criteria were determined for the evaluation of rail projects. The criteria are based on a review of other states' rail and/or multimodal planning methodologies, international rail project prioritization and funding activities, and recent federal initiatives. These criteria are divided into the three broad categories of sustainability, transportation, and implementation.

Sustainability	Transportation	Implementation
Economic impact	Safety and security	Cost effectiveness
Environmental/social impact	Connectivity	Project development
Asset preservation	Congestion relief	Partnerships
	System capacity	Innovation

Each criterion (and any associated sub-criteria) is assigned a weight according to importance to the overall type of project being evaluated, entered as a percentage of overall evaluation (i.e., the total of all weights is 100 percent). A rating is assigned to each criterion based on a user-defined scale common to all criteria, which is then multiplied by the weight, providing a total score for each criterion. The sum of these total scores provides a final overall composite score, for which the maximum is equal to the chosen rating scale multiplied by 100. Weighting of criteria may be adjusted to reflect certain priorities.

#### Washington State Department of Transportation (WSDOT)

The Washington State Freight Mobility Plan is being developed to prioritize freight transportation system improvement strategies that support and enhance trade and sustainable economic growth, safety, the environment, and goods delivery needs in the state. Each strategy would include an analysis of how proposed improvements will address freight mobility issues and affect specific supply chains and industries that have been identified as important to the state.<sup>25</sup>

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<sup>24</sup> Texas Rail Plan

<sup>25</sup> Washington State Department of Transportation Truck Freight Benefit Evaluation Methodology for Highway Projects PPT

The project prioritization methodology of WSDOT consists of the following:

- Compare the estimated cost to the potential benefit in order to determine which projects are most beneficial to construct
- Derive b/c ratio value derived from Priority Array Tracking System (PATS)
  - Centralized database that allows tracking of highway needs and their solutions, ensuring that WSDOT addresses the highest ranked transportation needs.
- Compare benefit-cost ratio of projects to determine its order of rank and priority

In addition, WSDOT developed and tested a truck freight benefit evaluation methodology to evaluate and prioritize state truck highway improvement proposals that provide the greatest value to freight dependent industries. As such, the following benefits were determined to be aligned with state and federal freight policies, and deemed most important to shippers, freight carriers, and state residents:

- Reducing:
  - Travel time
  - Direct truck operating costs
  - Truck engine emissions
- Improving:
  - Network resiliency
  - Economic output

In order to evaluate key truck freight benefit, WSDOT used travel demand and economic impact models.<sup>26</sup> The travel time changes are an input to both the econometric and emissions models. The IMPLAN (IMpact analysis for PLANning) model is used to evaluate the truck related economic impacts of all proposed highway projects on the State's freight economic corridors. WSDOT also ran a test comparison of IMPLAN and the Washington State Regional Computable General Equilibrium Model (CGE) to see if CGE's ability to better estimate inter-industry changes makes a material difference with large scale projects. Both models are based on IMPLAN, but CGE, though more complex and expensive, may provide the level of analysis needed for mega-projects.

#### Wisconsin Department of Transportation (WisDOT)

The WisDOT analyzes candidate project using the objective criteria and weighted measures, listed below. The WisDOT then ranks each candidate project based on an overall score using the following criteria:

- Economic
  - Reduction in travel costs vs. constructions costs
  - Businesses that will benefit
  - Economic growth potential
  - Unique reasons why project will attract new businesses
- Traffic flow
  - Level of service
- Safety
  - Crash rate
  - Severity proportion

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<sup>26</sup> DRAFT WSDOT Truck Freight Benefit-Cost Methodology Overview, April 2012

- Pedestrian and bicycle considerations
- Environmental
  - Natural resources
  - Physical resources
  - Socio-economic resources
  - Cultural resources
- Community input
  - Public support or opposition
  - Relationship to adopted plans

## Findings and Conclusions

This literature review identified data sources, goods movement forecasting models, other existing and on-going studies and planning efforts, and project identification and prioritization methodologies.

The study team identified several potential data sources that can be used to assess existing and future conditions including using the Freight Analysis Framework and other readily accessible data sources.

Of the three regional travel demand models, only the SACOG travel demand model has a truck sub-model that can be used to forecast truck volumes in the six county SACOG region. This model requires the use of specialized scripts to estimate the percentage of trucks at the link level. For areas outside of the model, we propose to use 20-year forecasts of volumes from CSMPs, TCRs, and TCCRs or other sources to identify potential impacts of projects.

Plans and studies reviewed by the study team will be used to identify goods movement needs as well as programmed, planned, and conceptual projects (e.g., RTP project lists, project lists provided by District 3 or other agencies).

The study team identified several statewide and regional efforts that used prioritization methodologies to evaluate goods movement projects. In this review, the team identified 13 types of prioritization criteria that have been used to evaluate freight projects. The next steps will be to meet with Caltrans to present these findings and to discuss which methodologies best meet the needs of District 3 and its stakeholders. As part of the Task 3 Methodology development task, the study team will develop a detailed review of the methodologies and metrics that may best assist the district in the evaluation of projects.

## Appendix A: Additional Goods Movement Data Sources

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Type of Source	Geography	Agency	Data/ Report	Information Description	Modes	URL	Source
Private	National	American Association of Railroads	Freight Commodity Statistics	Summarizes Class I railroad traffic by commodity	Rail	<a href="http://www.aar.org/pubstores/displayitem.aspx?id=14">http://www.aar.org/pubstores/displayitem.aspx?id=14</a>	Development of a Washington State Freight Data System. Washington State Department of Transportation. School of Economic Sciences, Washington State University. Pullman, WA. Aug-2007.
Private	National	American Association of Railroads	North American Trucking Survey	Sampling of trucks that were selected on the basis of shipment length-of-haul at specific truck stop locations	Truck	<a href="http://www.aar.org">www.aar.org</a>	Development of a Washington State Freight Data System. Washington State Department of Transportation. School of Economic Sciences, Washington State University. Pullman, WA. Aug-2007.
Private	National	American Association of Railroads	Railroad Industry Info	Using data from other published sources it highlights the importance and performance of freight railroads by providing state-by-state statistics of the U.S. freight railroad industry	Rail	<a href="http://www.aar.org/AboutTheIndustry/StateInformation.asp">http://www.aar.org/AboutTheIndustry/StateInformation.asp</a>	Development of a Washington State Freight Data System. Washington State Department of Transportation. School of Economic Sciences, Washington State University. Pullman, WA. Aug-2007.
Private	National	American Trucking Association (ATA)	ATA Fleet Directory and Motor Carrier Report	Data on fleet composition. Report compiled from a survey of ATA members	Truck	<a href="http://www.trucking.org/StateIndustry/Pages/StandardTruckingTransportationStatistics.aspx">http://www.trucking.org/StateIndustry/Pages/StandardTruckingTransportationStatistics.aspx</a>	Develop a Reliable Planning-Level Methodology to Forecast Heavy Vehicle (Truck) Traffic Growth on State Highway Routes in the SACOG Region. Caltrans District 3. Kittelson Associates. 2013.

Type of Source	Geography	Agency	Data/ Report	Information Description	Modes	URL	Source
Private	International	Boeing	Current Market Outlook	Produces Current Market Outlook long-term forecast of air traffic volumes and airplane demand. The forecast has applications including shaping product strategy and guiding long-term business planning.	Air	<a href="http://www.boeing.com/boeing/commercial/cmo/">http://www.boeing.com/boeing/commercial/cmo/</a>	System Metrics Group, Inc. (SMG)
Private	International	Colography Group, Inc.	U.S. Air Freight Origin Traffic Statistics	Details domestic and export air cargo shipments by weight, volume and number of shipments	Air	<a href="http://www.colography.com">www.colography.com</a>	Development of a Washington State Freight Data System. Washington State Department of Transportation. School of Economic Sciences, Washington State University. Pullman, WA. Aug-2007.
Private	International	Commonwealth Business Media, Inc.	Directory of U.S. Importers/Exporters	A cross-referencing index of company listings by geographical location, alphabetical name and products	Air, ocean	<a href="http://www.cbizmedia.com/products/?pub=DEI">http://www.cbizmedia.com/products/?pub=DEI</a>	Development of a Washington State Freight Data System. Washington State Department of Transportation. School of Economic Sciences, Washington State University. Pullman, WA. Aug-2007.
Private	International	Commonwealth Business Media, Inc.	Port Import/Export Reporting Service (PEIRS)	Offers the most comprehensive statistics dating back to the 1970's on global cargo movements transiting seaports in the United States, Mexico and South America to companies around the globe	Ocean	<a href="http://www.cbizmedia.com/products/?pub=PIERS">http://www.cbizmedia.com/products/?pub=PIERS</a>	Development of a Washington State Freight Data System. Washington State Department of Transportation. School of Economic Sciences, Washington State University. Pullman, WA. Aug-2007.

Type of Source	Geography	Agency	Data/ Report	Information Description	Modes	URL	Source
Private	National	DRI/McGraw-Hill	Freight Transportation and Logistics Service	Historical data and a series of forecasts of spatial origin and destination by mode and commodity	Barge, truck, rail	<a href="http://www.dri.mcgraw-hill.com">www.dri.mcgraw-hill.com</a>	Development of a Washington State Freight Data System. Washington State Department of Transportation. School of Economic Sciences, Washington State University. Pullman, WA. Aug-2007.
Private	International	DRI/McGraw-Hill	World Sea Trade Service	Produce detailed historical data and forecasts of cargo movements for major trade routes around the world	Ocean	<a href="http://www.dri.mcgraw-hill.com">www.dri.mcgraw-hill.com</a>	Development of a Washington State Freight Data System. Washington State Department of Transportation. School of Economic Sciences, Washington State University. Pullman, WA. Aug-2007.
Private	National	ENO Transportation Foundation	Transportation in America	More than two dozen tables provide an overview of data on tonnage and passenger-miles by mode, public and private costs for transportation employment, fatality rates, petroleum demand, vehicle purchases, and more	Rail, truck, air, barge, ocean	<a href="http://enotrans.com/store//page2.html">http://enotrans.com/store//page2.html</a>	Development of a Washington State Freight Data System. Washington State Department of Transportation. School of Economic Sciences, Washington State University. Pullman, WA. Aug-2007.

Type of Source	Geography	Agency	Data/ Report	Information Description	Modes	URL	Source
Private	International	Fleetowner Magazine	Carrier Routing Directory	Various owner/operator databases. Service information on 8,849 for-hire carriers. Includes company name, key contacts, address, phone numbers, website URL and commodities transported, as well as equipment details for each listed carrier. The directory contains information on carriers in the U.S., Canada and Mexico.	Truck	<a href="http://fleetowner.com/management/inbox/fleet_carrier_routing_directory">http://fleetowner.com/management/inbox/fleet_carrier_routing_directory</a>	Develop a Reliable Planning-Level Methodology to Forecast Heavy Vehicle (Truck) Traffic Growth on State Highway Routes in the SACOG Region. Caltrans District 3. Kittelson Associates. 2013.
Private	National	Global Insight	Freight Locator	Identifies who is shipping goods and what commodities are being shipped	Rail, truck, air, barge, ocean	<a href="http://www.globa Insight.com/ProductsServices/ProductDetail1024.htm">http://www.globa Insight.com/ProductsServices/ProductDetail1024.htm</a>	Development of a Washington State Freight Data System. Washington State Department of Transportation. School of Economic Sciences, Washington State University. Pullman, WA. Aug-2007.
Private	National	Global Insight	TRANSEARCH Insight and Freight Locator	County-level freight movement data by commodity group and mode of transportation	Multiple	<a href="http://www.globa Insight.com/ProductsServices/ProductDetail700.htm">http://www.globa Insight.com/ProductsServices/ProductDetail700.htm</a>	Development of a Washington State Freight Data System. Washington State Department of Transportation. School of Economic Sciences, Washington State University. Pullman, WA. Aug-2007.
Private	National	Global Insight	U.S. Intermodal Freight Flow	Projects freight flows by truck, air, rail, and water for all 3,000+ U.S. counties	Multiple	<a href="http://www.globa Insight.com/ProductsServices/ProductDetail1024.htm">http://www.globa Insight.com/ProductsServices/ProductDetail1024.htm</a>	Development of a Washington State Freight Data System. Washington State Department of Transportation. School of Economic Sciences, Washington State University. Pullman, WA. Aug-2007.

Type of Source	Geography	Agency	Data/ Report	Information Description	Modes	URL	Source
Private	International	Hoover's. A Dun and Bradstreet Company	Business Directory	Database of 85 million companies including locations and financial information	n/a	<a href="http://www.hoovers.com/">http://www.hoovers.com/</a>	SMG
Private	National	Institute of Transportation Engineers (ITE)	ITE Trip Generation, accompanied by the Trip Generation Handbook	Handbook and data series provide guidelines for application and interpretation of trip generation data	Truck	<a href="http://www.ite.org/tripgen/trippubs.asp">http://www.ite.org/tripgen/trippubs.asp</a>	Development of a Washington State Freight Data System. Washington State Department of Transportation. School of Economic Sciences, Washington State University. Pullman, WA. Aug-2007.
Private	National	Intermodal Association of North America	Intermodal Market Trends and Statistics	Quarterly report of industry statistics, and attempts to provide an in-depth look at intermodal industry data	Truck, rail	<a href="http://www.intermodal.org/pubs.html#MT&amp;S">http://www.intermodal.org/pubs.html#MT&amp;S</a>	Development of a Washington State Freight Data System. Washington State Department of Transportation. School of Economic Sciences, Washington State University. Pullman, WA. Aug-2007.
Private	International	Lloyd's Maritime Information Services, Inc.	Ship Movements Database	The only single source of information on worldwide merchant ship movements	Ocean	<a href="http://www.lloydsmlu.com/lmiu/index.htm">http://www.lloydsmlu.com/lmiu/index.htm</a>	Development of a Washington State Freight Data System. Washington State Department of Transportation. School of Economic Sciences, Washington State University. Pullman, WA. Aug-2007.
Private	International	Logistics Capital and Strategy, LLC (formerly MergeGlobal)	Air Cargo and Freight Transportation Forecasts	Provides an annual air cargo forecast	Air	<a href="http://www.logcapstrat.com/">http://www.logcapstrat.com/</a>	SMG

Type of Source	Geography	Agency	Data/ Report	Information Description	Modes	URL	Source
Private	International	Maritime Research Inc.	Chartering Annual	Presents yearly listings of charter fixture information (vessel, ownership, rate, lease/charter detail, etc.), including commodity, week and trade route	Ocean	<a href="http://www.maritime-research.com/">http://www.maritime-research.com/</a>	Development of a Washington State Freight Data System. Washington State Department of Transportation. School of Economic Sciences, Washington State University. Pullman, WA. Aug-2007.
Private	National	Woods & Poole Economics	County Level Economic Data	County-level economic and demographic data for the United States. The "County Forecasts" contains more than 900 economic and demographic variables for every state, region, county, and Metropolitan and Micropolitan Area in the U.S. for every year from 1970 to 2040. The "Economics" forecast also contains projections through 2040	n/a	<a href="http://www.woodsandpoole.com/">http://www.woodsandpoole.com/</a>	Develop a Reliable Planning-Level Methodology to Forecast Heavy Vehicle (Truck) Traffic Growth on State Highway Routes in the SACOG Region. Caltrans District 3. Kittelson Associates. 2013.
Private	International	World Institute for Strategic Economic Research (WISER)	WISERTrade International Trade and Trade database	International trade database	n/a	<a href="http://www.wisertrade.org/home/portal/index.jsp">http://www.wisertrade.org/home/portal/index.jsp</a>	SMG

Type of Source	Geography	Agency	Data/ Report	Information Description	Modes	URL	Source
Public	National	Agricultural Marketing Service of the USDA	Fresh Fruit and vegetable Shipments by Commodities, States, and Months	Reports seasonal movements in domestic, export and import volumes for fresh fruits and vegetables in the U.S.	Barge, rail, air, truck, ocean	<a href="http://www.ams.usda.gov/fv/mncs/shipsumm05.pdf">http://www.ams.usda.gov/fv/mncs/shipsumm05.pdf</a>	Development of a Washington State Freight Data System. Washington State Department of Transportation. School of Economic Sciences, Washington State University. Pullman, WA. Aug-2007.
Public	National	Agricultural Marketing Service of the USDA	Grain Transportation Report	Identifies volume of movements for domestic, export and total grain	Barge, truck, rail, ocean	<a href="http://www.ams.usda.gov/tmdtsb/grain/">http://www.ams.usda.gov/tmdtsb/grain/</a>	Development of a Washington State Freight Data System. Washington State Department of Transportation. School of Economic Sciences, Washington State University. Pullman, WA. Aug-2007.
Public	International	Airports Council International	Worldwide Airport Traffic Report	Air cargo movements for all major airports in the world	Air	<a href="http://www.airports.org/e-commerce/memb.htm">http://www.airports.org/e-commerce/memb.htm</a>	Development of a Washington State Freight Data System. Washington State Department of Transportation. School of Economic Sciences, Washington State University. Pullman, WA. Aug-2007.
Public	National	Bureau of Economic Analysis (BEA). US Department of Commerce	Transportation Satellite Accounts (TSA)	Way to measure contribution of transportation services to the national economy.	n/a	<a href="http://www.bea.gov/industry/tourism_data.htm">http://www.bea.gov/industry/tourism_data.htm</a>	SMG
Public	National	Bureau of Transportation Statistics (BTS), USDOT	Display Tool CD	Various components of the transportation network	Air, truck, barge, ocean, rail		Development of a Washington State Freight Data System. Washington State Department of Transportation. School of Economic Sciences, Washington State University. Pullman, WA. Aug-2007.

Type of Source	Geography	Agency	Data/ Report	Information Description	Modes	URL	Source
Public	National	Bureau of Transportation Statistics (BTS), USDOT	National Transportation Statistics	Statistics on the U.S. transportation system, including its physical components, safety record, economic performance, the human and natural environment, and national security	Multiple	<a href="http://www.bts.gov/publications/national_transportation_statistics/">http://www.bts.gov/publications/national_transportation_statistics/</a>	Development of a Washington State Freight Data System. Washington State Department of Transportation. School of Economic Sciences, Washington State University. Pullman, WA. Aug-2007.
Public	National	Bureau of Transportation Statistics (BTS), USDOT	Transborder Surface Freight Data	Provides information describing the value of North American trade by commodity; surface mode of transportation (rail, truck, pipeline, mail, or other); and shipment origin and destination by State, Province, US Customs port of entry, or Canadian or Mexican point of clearance, since April 1993.	Multiple	<a href="http://transborder.bts.gov/programs/international/transborder/">http://transborder.bts.gov/programs/international/transborder/</a>	SMG

Type of Source	Geography	Agency	Data/ Report	Information Description	Modes	URL	Source
Public	International	Bureau of Transportation Statistics (BTS), USDOT	Transborder Surface Freight Data Series	Air cargo movements for all major airports in the world. Provides North American merchandise trade data by commodity type, by surface mode of transportation (rail, truck, pipeline, mail and other), and with geographic detail for United States (U.S.) exports to and imports from Canada and Mexico	Air, rail, truck, pipeline	<a href="http://www.census.gov/foreign-trade/www/ftd.stat.guide.html">http://www.census.gov/foreign-trade/www/ftd.stat.guide.html</a>	Development of a Washington State Freight Data System. Washington State Department of Transportation. School of Economic Sciences, Washington State University. Pullman, WA. Aug-2007.
Public	National	Bureau of Transportation Statistics (BTS), USDOT	Transportation Statistics Annual Report	Review of the state of transportation statistics with recommendations for improvements and a presentation of the data	Multiple	<a href="http://www.bts.gov/publications/transportation_statistics_annual_report/">http://www.bts.gov/publications/transportation_statistics_annual_report/</a>	Development of a Washington State Freight Data System. Washington State Department of Transportation. School of Economic Sciences, Washington State University. Pullman, WA. Aug-2007.

Type of Source	Geography	Agency	Data/ Report	Information Description	Modes	URL	Source
Public	National	Bureau of Transportation Statistics (BTS), USDOT	US-Canada and US-Mexico Border Crossing Data	<p>Summary statistics for incoming crossings at the U.S.-Canadian and the U.S.-Mexican border at the port level. Data available for trucks, trains, containers, buses, personal vehicles, passengers, and pedestrians. Border crossing data are collected at border ports by U.S. Customs and Border Protection. The data reflect the number of vehicles, containers, passengers or pedestrians entering the United States. Customs and Border Protection does not collect comparable data on outbound crossings. Users seeking data on outbound vehicles may therefore want to review data from individual bridge operators, border state governments, or the Mexican and Canadian governments.</p>	Multiple	<a href="http://transborder.bts.gov/programs/international/transborder/TBDR_BC/TBDR_BC_Index.html">http://transborder.bts.gov/programs/international/transborder/TBDR_BC/TBDR_BC_Index.html</a>	SMG

Type of Source	Geography	Agency	Data/ Report	Information Description	Modes	URL	Source
Public	National	Bureau of Transportation Statistics (BTS). Office of Airline Information. USDOT	Air Carrier Statistics	Contains domestic and international airline market and segment data	Air	<a href="http://www.transstats.bts.gov/Tables.asp?DB_ID=110&amp;DB_Name=Air%20Carrier%20Statistics%20%28Form%2041%20Traffic%29&amp;DB_Short_Name=Air%20Carriers">http://www.transstats.bts.gov/Tables.asp?DB_ID=110&amp;DB_Name=Air%20Carrier%20Statistics%20%28Form%2041%20Traffic%29&amp;DB_Short_Name=Air%20Carriers</a>	Development of a Washington State Freight Data System. Washington State Department of Transportation. School of Economic Sciences, Washington State University. Pullman, WA. Aug-2007.
Public	California	California Highway Patrol (CHP)	Management Information System of Terminal Evaluation Records (MISTER)	Inspection truck terminal database of California-based trucks that includes the number of trucks, and powered vs. trailer units. Can be used to determine origin of trucks that return to their home base each evening). Currently, not being updated by CHP.	Truck	-	Develop a Reliable Planning-Level Methodology to Forecast Heavy Vehicle (Truck) Traffic Growth on State Highway Routes in the SACOG Region. Caltrans District 3. Kittelson Associates. 2013.

Type of Source	Geography	Agency	Data/ Report	Information Description	Modes	URL	Source
Public	California	Caltrans	Motor Vehicle Stock, Travel, And Fuel Forecast (MVSTAFF)	Aggregate forecasting model maintained by Caltrans Division of Transportation Planning. It provides information on number of vehicles, VMT, and fuel consumption, by vehicle type. Disaggregations are provided for state and non-state highways at the county level of geography, but not for individual highway routes. The primary drivers of truck VMT in the model include economic variables such as population, the size of the truck fleet, per capita income, and number of jobs in key economic sectors, such as manufacturing and farms.	Trucks	<a href="http://dot.ca.gov/hq/tsip/otfa/tab/mvstaff.html">http://dot.ca.gov/hq/tsip/otfa/tab/mvstaff.html</a>	Develop a Reliable Planning-Level Methodology to Forecast Heavy Vehicle (Truck) Traffic Growth on State Highway Routes in the SACOG Region. Caltrans District 3. Kittelson Associates. 2013.

Type of Source	Geography	Agency	Data/ Report	Information Description	Modes	URL	Source
Public	National	Federal Aviation Administration (FAA)	Air Passenger and All-Cargo Statistics	Contains revenue passenger boarding and all-cargo data	Air	<a href="http://www.faa.gov/airports_airtraff/airportsplanning_capacity/passenger_allcargo_stats/">http://www.faa.gov/airports_airtraff/airportsplanning_capacity/passenger_allcargo_stats/</a>	Development of a Washington State Freight Data System. Washington State Department of Transportation. School of Economic Sciences, Washington State University. Pullman, WA. Aug-2007.
Public	National	Federal Aviation Administration (FAA)	Airport Activity Statistics of Certificated Route Air Carriers	Summary data for all scheduled and nonscheduled service by large certificated U.S. air carriers	Air	<a href="http://www.bts.gov/publications/airport">http://www.bts.gov/publications/airport</a>	Development of a Washington State Freight Data System. Washington State Department of Transportation. School of Economic Sciences, Washington State University. Pullman, WA. Aug-2007.
Public	National	Federal Highway Administration (FHWA), USDOT	Highway Statistics	Data on the physical, operational, use, extent, and performance characteristics of public roads in the U.S.	Truck	<a href="http://www.fhwa.dot.gov/policy/ohpi/hss/index.htm">http://www.fhwa.dot.gov/policy/ohpi/hss/index.htm</a>	Development of a Washington State Freight Data System. Washington State Department of Transportation. School of Economic Sciences, Washington State University. Pullman, WA. Aug-2007.
Public	National	Federal Motor Carrier Safety Administration	Carrier Financial and Operating Statistics Information for Filers	Collects balance sheet and income statement data along with information on tonnage, mileage, employees, transportation equipment and other related items.	Truck	<a href="http://www.fmcsa.dot.gov/reporting/mcs_info.htm">http://www.fmcsa.dot.gov/reporting/mcs_info.htm</a>	Development of a Washington State Freight Data System. Washington State Department of Transportation. School of Economic Sciences, Washington State University. Pullman, WA. Aug-2007.
Public	National	FHWA and the Office of the Secretary	GeoFreight: The Intermodal Freight	Uses a routing model to assign data on freight flows to the transportation network.	Truck, Rail	<a href="https://www.bts.gov/pdc/user/products/src/products.xml?p=704">https://www.bts.gov/pdc/user/products/src/products.xml?p=704</a>	Development of a Washington State Freight Data System. Washington State Department of Transportation. School of Economic Sciences, Washington State University. Pullman, WA. Aug-2007.

Type of Source	Geography	Agency	Data/ Report	Information Description	Modes	URL	Source
Public	International	Foreign Trade Division of the US Department of Commerce and US Census	U. S. Census Foreign Trade Statistics	Statistical information on United States export and import trade	Ocean, Air	<a href="http://www.census.gov/foreign-trade/reference/products/catalog/port.html">http://www.census.gov/foreign-trade/reference/products/catalog/port.html</a> <a href="http://www.census.gov/foreign-trade/reference/codes/sitc/sitc.txt">http://www.census.gov/foreign-trade/reference/codes/sitc/sitc.txt</a> <a href="http://www.census.gov/foreign-trade/www/index.html">http://www.census.gov/foreign-trade/www/index.html</a>	Development of a Washington State Freight Data System. Washington State Department of Transportation. School of Economic Sciences, Washington State University. Pullman, WA. Aug-2007.
Public	International	Maritime Administration (MARAD), USDOT	U.S. Exports and Imports Transshipped via Canadian Ports	Total value and estimated weight of commodities transshipped via Canada by port of entry and exit or foreign country of origin/destination	Ocean/barge	<a href="http://www.marad.dot.gov/MaradStatistics/index.html">http://www.marad.dot.gov/MaradStatistics/index.html</a>	Development of a Washington State Freight Data System. Washington State Department of Transportation. School of Economic Sciences, Washington State University. Pullman, WA. Aug-2007.
Public	International	Massachusetts Institute for Social and Economic Research (MISER)	U.S. Exports by State of Origin of Movement	States of origin of movements of the export shipments and the foreign country of destination provide detailed shipment flows	Air, ocean	<a href="http://www1.misr.umass.edu/trade/statex.html">http://www1.misr.umass.edu/trade/statex.html</a>	Development of a Washington State Freight Data System. Washington State Department of Transportation. School of Economic Sciences, Washington State University. Pullman, WA. Aug-2007.

Type of Source	Geography	Agency	Data/ Report	Information Description	Modes	URL	Source
Public	National	Oak Ridge National Laboratory	Freight Model Improvement Program	Information on current and best practices in local freight data collection	Truck, rail, barge, ocean	<a href="https://www.fmi.gov/Home/tabs/36/Default.aspx">https://www.fmi.gov/Home/tabs/36/Default.aspx</a>	Development of a Washington State Freight Data System. Washington State Department of Transportation. School of Economic Sciences, Washington State University. Pullman, WA. Aug-2007.
Public	National	Office of Highway Policy Information, USDOT	Highway Performance Monitoring System (HPMS)	Data on the extent, condition, performance, use, and operating characteristics of the Nation's highways on an annual basis	Truck	<a href="http://www.fhwa.dot.gov/policy/ohpi/hpms/">http://www.fhwa.dot.gov/policy/ohpi/hpms/</a>	Development of a Washington State Freight Data System. Washington State Department of Transportation. School of Economic Sciences, Washington State University. Pullman, WA. Aug-2007.
Public	National	Surface Transportation Board, USDOT	Rail Carload Waybill Sample	A stratified sample of carload waybills for terminated shipments by railroad carriers	Rail	<a href="https://www.stb.dot.gov/stb/industry/econ_waybill.html">https://www.stb.dot.gov/stb/industry/econ_waybill.html</a>	Development of a Washington State Freight Data System. Washington State Department of Transportation. School of Economic Sciences, Washington State University. Pullman, WA. Aug-2007.
Public	National	US Census Bureau	Annual Survey of Manufacturers	Useful source of information on traffic and volume growth	Truck, rail, ocean, air, barge	<a href="http://www.census.gov/mcd/asmhome.html">http://www.census.gov/mcd/asmhome.html</a>	Development of a Washington State Freight Data System. Washington State Department of Transportation. School of Economic Sciences, Washington State University. Pullman, WA. Aug-2007.
Public	National	US Census Bureau	Census of Manufacturers	The major source of information about the structure and functioning of the manufacturing sector	Multiple	<a href="http://www.census.gov/epcd/www/97EC31.HTM">http://www.census.gov/epcd/www/97EC31.HTM</a>	Development of a Washington State Freight Data System. Washington State Department of Transportation. School of Economic Sciences, Washington State University. Pullman, WA. Aug-2007.
Public	National	US Census Bureau	Commodity Flow Survey (CFS)	A five year rotation, covering the industries of mining, manufacturing, wholesale trade and selected retail activities, in both national and metropolitan areas	Truck	<a href="http://www.census.gov/econ/www/cfsnew.html">http://www.census.gov/econ/www/cfsnew.html</a>	Development of a Washington State Freight Data System. Washington State Department of Transportation. School of Economic Sciences, Washington State University. Pullman, WA. Aug-2007.

Type of Source	Geography	Agency	Data/ Report	Information Description	Modes	URL	Source
Public	National	US Census Bureau	Truck Transportation, Messenger Services & Warehousing	Operating revenue and operating revenue by source; percentage of motor carrier freight revenue by commodity type, weight of shipments handled, length of haul, and shipments country of origin and destination; and vehicle fleet inventory	Truck	<a href="http://www.census.gov/svsd/www/sas48.html">http://www.census.gov/svsd/www/sas48.html</a>	Development of a Washington State Freight Data System. Washington State Department of Transportation. School of Economic Sciences, Washington State University. Pullman, WA. Aug-2007.
Public	National	US Census Bureau	Vehicle Inventory Use Survey (VIUS)	Discontinued in 2002. Provides data on the physical and operational characteristics of the nation's truck population. Its primary goal is to produce national and state-level estimates of the total number of trucks.	Trucks	<a href="http://www.census.gov/svsd/www/vius/products.html">http://www.census.gov/svsd/www/vius/products.html</a>	SMG
Public	National	US Corp of Engineers	Waterborne Commerce and Vessel Operators	Data on barge and other vessel movements	Barge, ocean	<a href="Http://www.iwr.usace.army.mil/ndc/prod.htm#NDC%20Data%20Bases">Http://www.iwr.usace.army.mil/ndc/prod.htm#NDC%20Data%20Bases</a>	Development of a Washington State Freight Data System. Washington State Department of Transportation. School of Economic Sciences, Washington State University. Pullman, WA. Aug-2007.

Type of Source	Geography	Agency	Data/ Report	Information Description	Modes	URL	Source
Public	National	US Department of Energy	Quarterly Coal Report	Detailed quarterly summary statistics of coal production, distribution, trade, receipts, consumption and stocks	Rail, barge, ocean	<a href="http://www.eia.doe.gov/cneaf/coal/page/pubs.html">http://www.eia.doe.gov/cneaf/coal/page/pubs.html</a>	Development of a Washington State Freight Data System. Washington State Department of Transportation. School of Economic Sciences, Washington State University. Pullman, WA. Aug-2007.
Public	International	US International Trade Commission	Interactive Tariff and Trade Data Web	Provides international trade statistics and tariff data on a self-service, interactive basis, responding to user-defined queries integrating international trade statistics with fairly complex tariff and customs treatment	Air, truck, ocean, barge	<a href="http://dataweb.usitc.gov/">http://dataweb.usitc.gov/</a>	Development of a Washington State Freight Data System. Washington State Department of Transportation. School of Economic Sciences, Washington State University. Pullman, WA. Aug-2007.